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ABSTRACT

Six mildly and moderately mentally retarded adults with chronic and severe emotional/behavioral problems participated in a study of the assumption that aggression and conduct disorders reflected self-managed coping skills deficits. The study was conducted in a vocational training workshop setting located in the Waisman Center on Mental Retardation and Human Development at the University of Wisconsin. Measures of four variables were obtained for each subject: disruptive verbal and physical behavior, on-task behavior, work productivity, and generalization of intervention effects. Self-management training featured instruction in self-monitoring, self-evaluation, self-consequation, and self-instruction. The six subjects were placed in three groups of two individuals each for treatment phases of the study. Results revealed that the treatment package had a statistically collateral increase in the percent of on-task behavior and in work productivity for two of the three groups. Visual inspection of data suggested little transfer of gains to an untreated setting. Implications for vocational rehabilitation practice are noted. Twenty-eight figures and a twenty-five-page reference list are provided. (CL)

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Self-Management Training of Mentally Retarded Adults with Chronic Conduct Difficulties

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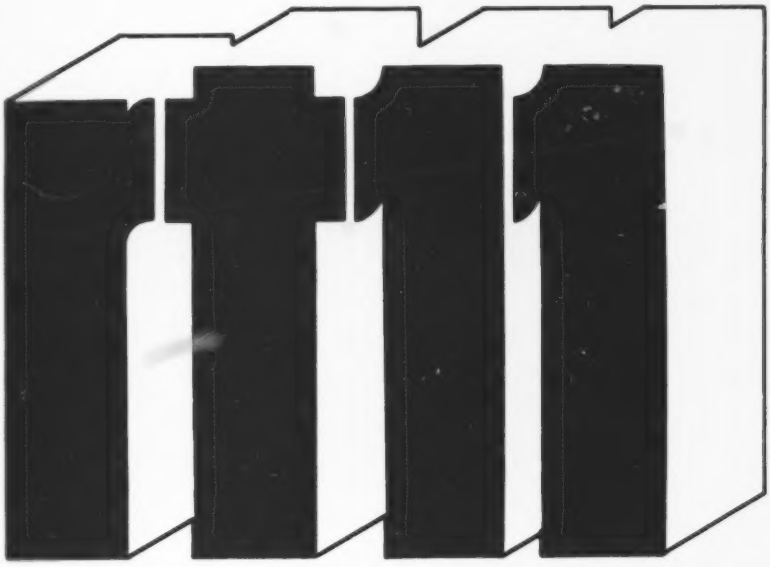

SELF-MANAGEMENT TRAINING OF MENTALLY RETARDED ADULTS WITH CHRONIC CONDUCT DIFFICULTIES

Christine L. Cole, William I. Gardner, and Orv C. Karan

Rehabilitation Research and Training Center
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1983

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The writers wish to express their sincere appreciation to the mentally retarded adults who participated in this clinical research program. Even though seemingly in basic conflict with their social environment, these adults demonstrated that they could learn more meaningful personal skills when provided an opportunity to do so. The past failures and frustrations of these adults provided the challenge for the clinical research staff to develop new models of rehabilitation that would assist the clients in personal and vocational development. Their successes, and failures, continue to guide us toward creating even more effective rehabilitation approaches.

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Chapter I

INTRODUCTION

The presence of various forms of maladaptive behavior is a prevalent problem among the mentally retarded. Bialer and Sternlicht (1977), Forehand and Baumeister (1976), Ingalls (1978), and Szymanski and Tanguay (1980) have all emphasized the increased susceptibility of the mentally retarded to serious and chronic behavioral and emotional difficulties. Formal epidemiological studies of the occurrence of severe behavior difficulties, while beset by methodological problems, suggest a significantly increased rate of occurrence over that observed in the nonretarded population (e.g., Chess, 1977; Phillips & Williams, 1975; Rutter, 1971; Tarjan, 1977). Various studies report that up to 50% or more of mentally retarded persons referred for institutional placement display clear indices of behavioral and emotional difficulties (see Menolascino, 1977) and that a significant percentage of those in residential facilities serving the mentally retarded have the additional handicap of such disturbances (Sheerenberger, 1978). A recent national survey of community residential facilities for the mentally retarded reported chronic behavioral and emotional difficulties to be the single most frequently identified condition among those residents with additional handicapping conditions (Bruiniks, Hauber, & Kudla, 1979).

Other studies of mentally retarded individuals living in the community consistently have reported a 20 to 35% and higher frequency of obvious problems (e.g., Menolascino, 1977; Szymanski & Tanguay, 1980).

In summary, although available data must be viewed with caution relative to precise prevalence rates of various psychological problems, most authors agree that there generally is a high prevalence of behavioral and emotional difficulties in the mentally retarded population.

Significance of the Problem

Such difficulties as excesive anxiety and related defensive reactions and a range of disorders of conduct, impulse control, affect, and generalized helplessness can actively interfere with the development and occurrence of adaptive behaviors. Of specific relevance to the current study, the major role assumed by verbal and physical aggression and other conduct difficulties in the vocational, social, and personal failures of mentally retarded adults has been highlighted by a number of writers (e.g., Eyman & Call, 1977; Floor & Rosen, 1975; Menolascino, 1977; Szymanski & Tanguay, 1980). These writers emphasize that for a significant number of mentally retarded adults residing in institutional and community settings, intellectual limitations, while a contributing influence, cannot be viewed as the primary cause of failure to attain an acceptable level of vocational, personal, and

social independence.

In fact, next to the severity of retardation, the presence of such difficulties frequently is the single most important factor in determining initial institutionalization of the mentally retarded (Hill & Bruiniks, 1981; Pagel & Whitling, 1978; Sternlicht & Deutsch, 1972; Thorsheim & Bruiniks, 1979). In addition, maladaptive behaviors, especially those of a conduct nature, have been cited as major barriers to community placement of the institutionalized retarded (Eyman, Borthwick, & Miller, 1981). Eyman and Call (1977), for example, suggested that:

> Chronic problems of self-violence, violence to others, and damaging property represent the type of behavior that will surely persist as obstacles to community placement for large numbers of individuals. (p. 143)

They emphasized the need for:

> Intensified individual attention and programming for retarded persons with behavior problems if community placement is to be successful for large numbers of individuals. (p. 143)

Data from a number of studies further indicate that maladaptive behavior accounts for the majority of community adjustment failures and subsequent reinstitutionalization of the mentally retarded (Eyman & Call, 1977; Heal, Sigelman, & Switzky, 1978; Hill & Bruiniks, 1981; Sternlicht & Deutsch, 1972; Windle, 1962; Windle, Stewart, & Brown, 1961). Although in recent years the deinstitutionalization movement has resulted in a fairly

constant decrease in the total number of institutionalized mentally retarded individuals, these high release rates are offset by increasing readmissions. People are being released, but more and more are returning (Conroy, 1977; Lakin, 1979). In 1979, readmissions acutally outnumbered first admissions to public residential facilities (Krantz, Bruiniks, & Clumper, 1979). Recent statistics confirm that residential facilities in the community not only are less likely to admit residents with maladaptive behavior, but also are more likely to dismiss them for reinstitutionalization in public institutional facilities (Hill & Bruiniks, 1981). These readmission rates to institutions would suggest that community residential facility programs may be unable to cope with the behavioral and emotional problems presented by their residents using current intervention and management procedures.

In studies designed to identify more specific reasons for community failure and reinstitutionalization of mentally retarded individuals, Pagel and Whitling (1978) and Schalock, Harper, and Genung (1981) found the following maladaptive behaviors as major factors leading to readmission: self-abuse, defiance, "bizarre behavior," aberrant sexual behavior, property destruction, fire setting, and threatened suicide. In contrast, those who were successfully placed demonstrated significantly more appropriate social and emotional behaviors than those who

failed. In considering these and similar data, Eyman et al. (1981) suggested:

> As long as a high prevalence of deviant behavior persists among specified groups of retarded individuals, successful community adjustment for large numbers of such people appears dubious at this time. (p. 476-477)

The frequent occurrence of maladaptive behaviors in mentally retarded individuals has additional significant implications. Nihira and Nihira (1975), in studying the adaptive features of a large group of community-placed retarded individuals, reported that aggression and related conduct difficulties frequently placed the person in jeopardy for (a) health and/or safety, (b) general welfare, and (c) legal concerns. The behaviors reported included such actions as verbal and/or physical violence, physical violence to property, temper tantrums, disrespect for others' property, and self-violence. Wehman and McLaughlin (1979), in a study of behavior problems among the more severely mentally retarded attending educational programs in the community, found that the most frequently occurring difficulties, as well as the problems which teachers found most difficult to manage, included aggression, property destruction, self-abuse, and temper tantrums.

Finally, maladaptive behavior has been cited as a major factor contributing to vocational failure. In a study of mentally retarded adults placed in the community, Seltzer and Seltzer (1978) found emotional instability and

behavior problems to be important factors in individual failures to adjust to vocational placement. Schalock and Harper (1978), in a study of skills required for successful employment of mentally retarded adults, found that inappropriate behavior was present in 100% of clients who failed. More recently, Greenspan and Shoultz (1981) reported that, of a group of mentally retarded adults who had lost their jobs, a majority were dismissed primarily for reasons of temperament (e.g., easily angered), character (e.g., assaulting or stealing from co-workers), or social awareness (e.g., excessive and inappropriate conversations). These results emphasize the link between behavioral and emotional difficulties and vocational failure of mentally retarded clients.

Current Needs

In view of the rate of occurrence, severity, and chronicity of behavioral and emotional difficulties of the mentally retarded, it is obvious that there is a major need for effective intervention approaches with this population. This is especially vital considering the relatively fragile personal and social competency of many, if not most, mentally retarded persons, even in the absence of additional maladaptive behaviors (Gardner & Cole, 1981).

Recent legislation and litigation further emphasize the need for adequate attention to maladaptive behavioral and emotional problems presented by the mentally retarded.

The deinstitutionalization movement has resulted in placement in community living arrangements of numerous individuals with severe adjustment problems. Public Law 94-142 (the Education for All Handicapped Children Act), signed into law in 1975, mandates that every school system in the nation make provision for a free, appropriate public education for every child between the ages of 3 and 21, regardless of how, or how seriously, he or she may be handicapped. Thus, mentally retarded children, adolescents, and young adults with severe behavior problems no longer can be denied placement in community educational programs due to their difficulties in adapting to the requirements of the setting.

Most relevant to this study, vocational rehabilitation agencies are mandated by Public Law 93-112 and the recent comprehensive Rehabilitation Services Amendments of 1978 to serve the more severely disabled. As previously implied, one of the most difficult and perhaps the most neglected (unserved or underserved) groups of severely disabled citizens eligible for rehabilitation services is that group with the dual handicaps of mild to severe intellectual retardation and severe adaptive behavior limitations related to chronic debilitating behavioral and emotional problems. Further, of these problems, the most difficult to manage and successfully (re)habilitate are those involving physical and verbal aggression and related

difficulties of conduct. Mentally retarded adults with chronic conduct difficulties typically present serious problems for rehabilitation personnel due to: (a) the relative lack of successful experiences with such clients as historically they have been viewed as unfeasible for rehabilitation services or, if accepted, frequently have been dismissed due to difficulties of management; (b) the relative absence of successful rehabilitation procedures (vocational, psychological, and/or psychiatric) for use by program staff; and (c) the absence of ongoing research efforts to provide guidance to the development and evaluation of effective (re)habilitation practices for these psychological difficulties. However, mentally retarded adults with chronic conduct difficulties who previously have been categorically rejected as nonfeasible for vocational services, now must be provided suitable rehabilitation programs.

Inadequacy of Current Practices

Meeting the psychological treatment needs of the mentally retarded is an obvious goal for rehabilitation programs, but in fact public and private service personnel as a whole currently neither have the skills and commitment to effectively treat these difficulties nor the service delivery system required for effective and efficient treatment. As stated by Conroy (1977), "Public pressure to get people out of institutions has far outstripped its

essential corollary: pressure to create normalizing community service systems" (p. 46). Cushna, Szymanski and Tanguay (1980) further suggested:

> Mentally retarded persons, even more than nonretarded, need mental health services. The need is acute, and yet there are many indications that the ability of mental health professionals, and psychiatrists in particular, to deliver such services has been blunted. (p. 3)

Even community mental health clinics do not effectively serve the mentally retarded--many still categorically exclude them. An additional unmet need is the paucity of treatment services provided to large state institutions (Cushna et al., 1980).

Even if services were available, a major problem would remain relative to the availability of viable intervention procedures. Historically, only minimal research and clinical efforts have been devoted to the development and evaluation of effective approaches for treatment of chronic maladaptive behavior of the mentally retarded. A review of available psychological, educational, psychiatric, and rehabilitation literature concerning psychosocial and vocational (re)habilitation of the mentally retarded with chronic behavioral and emotional difficulties emphasizes the relative <u>ineffectiveness</u> of many current intervention approaches. It is not unusual for mental health professionals (e.g., psychologists, social workers, psychiatrists, counselors), with little training or experience in working with the mentally retarded, to

attempt to treat them like clients of normal intelligence who present behavioral and emotional problems. The results typically are disappointing (e.g., Szymanski & Tanguay, 1980). Personal counseling, psychotherapy, and other psychodynamic approaches, as currently defined and practiced, do not appear to be generally feasible, efficient, or effective with the mentally retarded (Rosen, Clark, & Kivitz, 1977; Sternlicht, 1977). Even if these treatment services were effective and available, few mentally retarded clients would use them successfully. Most simply would not independently and willingly seek or cooperate with treatment, as they frequently do not have the insight, motivation, or resources to remain involved in such clinical visits.

Psychotropic drug therapy, while a potentially valuable adjunct in selected instances to a more comprehensive treatment effort designed to promote appropriate emotional control and expression and interpersonal skill development, does not provide educational, residential, vocational, and social agencies with a viable treatment option when used as the major or only treatment approach. However, in all too many instances the only specialized treatment provided the mentally retarded who present obvious behavioral and emotional difficulties is that of drug therapy. Further, it is not unusual that such treatment is provided with

minimal or no consultation or communication with other professional program efforts (Breuning, Davis, & Poling, 1982; Gardner & Cole, 1981; Rivinus, 1980; Sprague & Baxley, 1978).

A wide range of external behavior management procedures have been used successfully with a variety of developmental problems including dressing (Azrin, Schaeffer, & Wesolowski, 1976), self-feeding (Nelson, Cone, & Hanson, 1975), grooming (Wehman, 1974), language development (Jones & Robinson, 1979), nonspeech communication (Fristoe & Lloyd, 1979), locomotion (O'Brien, Azrin, & Bugle, 1972), leisure skills (Bundscheh, Williams, Hollingsworth, Gooch, & Shirer, 1972), imitative behavior (Butz & Hasazi, 1973), hyperactivity (Christensen, 1975), and distractability (Maier & Hogg, 1974). However, well-defined behavior therapy approaches for more generalized personality problems, problems of affective expression, impulse control, and conduct, problems reflecting generalized motivational inadequacy, and the like are limited (Gardner & Cole, in press).

Of specific relevance to the current study, even though existing behavioral approaches are somewhat effective in external management of various conduct difficulties of the mentally retarded client, there is a noticeable lack of research-based procedures concerned with teaching such retarded clients those coping skills to

replace the inappropriate behavior typically suppressed by aversive consequences.

In illustration, Gardner and Cole (1982) reviewed the available behavior therapy studies concerned with treatment of aggression and related conduct difficulties in the mentally retarded. The vast majority of these studies used various externally-managed behavior suppression (punishment) procedures (e.g., time-out, response cost, overcorrection, presention of aversive consequences) as the major intervention tactic. Most of the remaining studies, although not relying solely on punishment, did include behavior suppression procedures as the major components of the treatment program. Thus, of the research literature available to rehabilitation personnel which provides guidance in development of intervention programs for use with the mentally retarded presenting problems of conduct, most include use of some type of punisment procedure. While potentially valuable in management of various disruptive actions, such procedures do not provide the mentally retarded client with adequate prosocial replacement behavior skills needed if personal, social, and vocational adjustment are to be realized. Further, most of the studies were conducted in residential settings, with only about 2% conducted in community rehabilitation settings. Thus, practical as well as ethical and legal considerations limit the acceptability and feasibility of

use of such procedures in community agency settings (Gardner & Cole, 1982; Jansen, 1980; Repp & Deitz, 1978; Touchette, 1978).

Limitations of External Procedures

While the application of behavior therapy procedures involving changes in the external environment by external agents is well-documented as described above, use of such procedures with the mentally retarded has several additional disadvantages (Kazdin, 1975). First, behavior change may not be maintained over time. External agents who are consistently associated with the administration of contingencies, and even the external contingencies themselves, may become cues for the occurrence or suppression of the target behavior(s). When these external agents or external contingencies are removed, the behavioral gains may dissipate. Second, behavior change may not generalize to new situations in which externally-administered contingencies have not been applied. Third, if external treatment agents are working with several clients simultaneously, as frequently is the case, several instances of the target behavior may occur without being observed and consequated by the external agent, thus reducing therapy effects. Finally, and of central importance to the present study, there is the philosophic concern that the client has limited involvement in the behavior change process, as control resides in external

agents who assume responsibility for determination and administration of the external environmental contingencies. The mentally retarded client is controlled by external factors over which he or she has minimal influence, and thus is left with little personal freedom or involvement.

In addition to these difficulties associated with traditional behavioral procedures, the following emphasize the need for alternative approaches to the treatment of behavioral and emotional difficulties of the mentally retarded:

1. The recent focus on normalization has emphasized the need to develop greater independence in the mentally retarded (e.g., Wolfensberger, 1972). This would suggest that program procedures are needed which actively encourage skills of independence and self-direction.

2. Widespread placement of the mentally retarded from the institutional setting into a less dependent role in the community creates the need to teach a range of self-managed adaptive skills. The mentally retarded person is expected to successfully adapt to a more independent lifestyle without close and frequent supervision. Program procedures which rely on external management perpetuate dependency and impede community adjustment.

3. Increasing evidence that at least a significant aspect of the dependency of the mentally retarded, reflected in such personality features as external locus of

control, outerdirectedness, and learned helplessness (DeVellis, 1977; Balla & Zigler, 1979), is a function of the dependency-producing experiences provided them has stimulated therapists to search for intervention models and procedures that hold promise of increasing the independence of the mentally retarded.

4. Increasing evidence with the nonretarded that teaching self-management skills can serve as a practical, effective, and efficient alternative to external control procedures has prompted interest in application of self-management procedures to the retarded population.

Cognitive Behavioral Procedures

Behavior therapists, recognizing the limitations of externally-managed approaches and acknowledging both the practical and philosophic concerns outlined above, have begun investigating the usefulness of various cognitive behavioral self-management procedures with the mentally retarded. Not only do such procedures offset the philosophic and implementation concerns of external control, they also offer the possibility of improved maintenance and generalization of behavior change over time and settings (Marholin, Siegel, & Phillips, 1976; Rosenbaum & Drabman, 1979; Stokes & Baer, 1977).

Self-management, also termed self-control, self-regulation, or self-direction, generally refers to those behaviors engaged in by an individual with an intent to

influence certain alternative behaviors available in his or her repertoire (Gardner, 1977). The "intent" aspect of self-management implies the occurrence of certain covert cognitive (self-statement) processes. Thus, cognitive behavioral self-management procedures are designed to teach the person to use these cognitive processes in a deliberate manner to influence other of his or her thoughts or feelings as well as his or her overt behavior. Thoreson and Mahoney (1974), in an attempt to synthesize various writers' descriptions of self-management (self-control) (e.g., Bandura & Walters, 1963; Cautela, 1969; Goldiamond, 1965; Kanfer, 1971; Skinner, 1953), offered the following operational definition:

> A person displays self-control when in the relative absence of immediate external constraints, he engages in behavior whose previous probability has been less than that of alternatively available behaviors. (p. 12)

Thus, a person displaying self-control may work longer, talk softer, produce more, fight less, ignore taunts from peers, and the like.

Thoreson and Coates (1976) described several additional features related to the above definition of self-management. First, it is valuable to note that self-control is conceptualized as a variety of learnable skills rather than as a single personality trait or underlying characteristic of the person. Second, the fact that considerable emphasis is placed on cognitive (verbal

mediation) processes involved in self-management does not imply that external influences are secondary or unimportant. Rather, there is a reciprocal interaction between external and internal influences. Third, variables in both the external and internal environments of a person may be targeted for change. Finally, the relative magnitude and variety of self-managed behaviors required of an individual tends to diminish over time. For example, considerable self-direction may be required initially for a mentally retarded person to independently engage in newly acquired interpersonal interaction behaviors. However, as these social skills are practiced and begin to come under the influence of other controlling factors which serve to increase the probability of their occurrence, deliberate self-management actions no longer are necessary.

Thus, cognitive behavioral self-management procedures which involve the use of skills of self-monitoring, self-evaluation, self-consequation, and/or self-instruction may offer promise to the mentally retarded individual who typically is a victim of external and internal conditions over which he or she seemingly has little or no control.

Clinical Behavior Analysis

As stated, rehabilitation agency programs are being required to serve the mentally retarded who present severe behavioral and emotional problems. Of these difficulties, conduct disorders involving verbal and physical aggression,

teasing and taunting peers, problems of temper and anger control, and related impulsive or explosive outbursts frequently create considerable problems for such rehabilitation efforts. These disruptive behaviors typically produce considerable peer feedback in the form of complaining, name-calling, crying, threatening or yelling, and physical aggression, as well as verbal and related social feedback from staff. Observations indicate that even if staff attention is provided for appropriate behaviors, it apparently is less influential than that experienced following misbehavior. As suggested by Martin and Foxx (1973), such "negative" feedback may well serve a strong positive reinforcement function. It often is not possible, to control these sources of potential reinforcement. Even if possible, this externally-managed strategy would not actively teach such individuals alternative prosocial interaction or coping skills.

Further, observation of groups of clients with such difficulties suggests the frequent contributing influence of a number of general personal characteristics:

1. Many such individuals are excessively under the influence of external stimulation provided by the physical and social environments. Stimulation is presented from the external environment and the person who has no effective verbal mediational processes appears to respond in a rather automatic, impulsive manner, without awareness of or

concern over the effects that such behavior may have on him/herself or others. The person tends to be reactive instead of behaving in a more reflective, thoughtful, self-directing fashion. Many of the basic skills of self-management are absent or of insufficient strength to occur in the presence of highly provocative cues. As a result, the person seems to view others as being in charge, and himself as having minimal influence or personal responsibility for what he does.

2. Closely related is the observation that self-concept attributes of such clients often are poorly developed and of a negative nature. Examples of negative self-statements frequently heard include "I don't like myself," "I'm not very smart," "I'm dumb," or "I can't do anything right." For the person who has strong patterns of thinking negatively about herself and her competencies, such labels as "ugly," "bad," "stupid," "retarded," "handicapped," "crippled," and "weak" become part of her self-referents. These also become cues for negative emotional reactions and avoidance of various interpersonal/social situations that potentially could contribute to the development of more positive features.

Further, the mentally retarded with chronic behavioral and emotional problems typically have poorly differentiated social roles. Either they are not aware of what is expected of them in various situations (e.g., on the bus,

in a vocational work setting, as a member of a peer group), or else they do not value or have the social motivational system to engage in these role behaviors expected in various settings.

3. The emotional features of such individuals differ in several respects. First, there is less emotional differentiation; the predominant emotional tone is that of negative arousal. Numerous aspects of the person's external and internal environments serve as cues for a generalized state of negative emotionality. Second, the person is prone to engage in episodes of intense negative emotional arousal that frequently result in aggressive outbursts. It is not unusual to observe that minor sources of irritation or frustration may produce unusually strong negative emotional reactions. Even events that typically produce positive (or neutral) emotional reactions in most persons may become cues for negative emotional arousal. Next, there are few events, situations, activities, people, and self-referents in the person's environment that produce such positive emotions as happiness, excitement, enthusiasm, pride, glee, and the like. Excessive failure experiences and few experiences of being successful, of being accepted, of being reinforced by a variety of people for a range of behaviors presumably have resulted in minimal positive emotional learning. Finally, the excessive number of aversive cues frequently motivate the

individual to engage in a disproportionate amount of avoidance behavior. That is, the person spends much of his psychological resources in attempts to avoid or terminate negative situations rather than utilizing these to approach and experience positive consequences.

4. Other motivational features differ in several important respects. First, there is a restriction in the type and range of events which serve as effective incentives to initiate behavior or as positive reinforcers to strengthen behavior. There is a delay in the level of motivational development, with the person too frequently dependent on a limited number of concrete reinforcers (e.g., food, drink) and disinterested in other incentives that represent more developmental maturity (e.g., achievement, persistence at an activity, being pleased with one's own activities, pleasing others). Next, for many individuals, the value of incentives varies considerably from time to time. The person may easily tire of any specific incentive or may be quite erratic in response to a particular item or event. In other instances, the person seems insatiable and will go to extremes to insure that a specific incentive (e.g., social attention) is provided frequently. Finally, mentally retarded individuals with chronic behavioral and emotional problems also may require frequent and immediate positive consequences for learning and maintenance of appropriate prosocial behaviors. There

is minimal delay of gratification, that is, the person has difficulty postponing satisfaction.

5. Many such individuals are characterized by numerous social and coping skill deficits. Although intervention efforts typically are focused on the excessive disruptive, bothersome, or dangerous behaviors (e.g., aggressiveness, noncompliance, temper tantrums, excessive fears and associated avoidance reactions, self-injurious behaviors), such actions frequently are associated with and reflect numerous social skill deficits. In many instances, the person does not have alternative coping skills to adapt to the stress to which she is exposed.

Purpose of the Study

Each of these observations relative to personal characteristics which potentially contribute to chronic conduct difficulties was used in developing the intervention program evaluated in this study. The major emphasis of the program was based on the assumption that the verbal and physical aggression and related conduct difficulties in the mentally retarded reflect self-managed coping skills deficits. With this view, the subject is seen as having in his or her repertoire limited self-influencing responses necessary for successfully managing his or her own thoughts, feelings, and behaviors under certain provocative stimulus conditions. Thus, the program was designed to teach the subject those coping skills which

he/she can then self-manage under certain situations in which disruptive behavior is likely to occur.

More specifically, the purpose of this study was to evaluate the effects of a multicomponent self-management intervention package on the chronic and clinically significant disruptive verbal and physical behaviors of mildly and moderately mentally retarded adults in a vocational training setting. Although not specific targets of the intervention program, the effects on the collateral behaviors of work productivity and on-task behaviors were observed. These collateral measures were included as both are of interest to the vocational rehabilitation practitioner. It is reasonable to assume that as disruptive behaviors decrease, both on-task and production rate should increase without specific intervention. Again, the rationale of the training program was to provide the mentally retarded adult alternative self-directing behaviors which would effectively compete with chronic problems that initially were under the rather automatic influence of external provocation. Although the self-management components included in this intervention package have been used successfully in various combinations with other clinical groups, the present study evaluated the applicability of this particular package to mentally retarded adults presenting both cognitive and social/emotional skill deficits. Further, the study

attempted to evaluate the possible generalization of observed treatment effects to a nontreatment setting.

Problem Statements

The experimental questions addressed in this study were as follows. For mildly and moderately mentally retarded adults with chronic and clinically significant difficulties of conduct in a vocational rehabilitation setting, what are the effects of a multicomponent self-management training package on:

1. The rate of disruptive verbal and physical behaviors?
2. The percent of on-task behavior?
3. The rate of work productivity?
4. The rate of appropriate and inappropriate verbal and physical behaviors within a nontreatment setting?

Hypothesis Statements

Directional hypotheses formulated to test the specific problem statements were as follows. For mildly and moderately mentally retarded adults with chronic and clinically significant conduct difficulties in a vocational setting, a multicomponent self-management training package:

1. Experimental Hypothesis: Will have no effect on the rate of disruptive verbal and physical behaviors.

   Alternative Hypothesis: Will significantly

decrease the rate of disruptive verbal and physical behaviors.

2. Experimental Hypothesis: Will have no effect on the percent of on-task behavior.
   Alternative Hypothesis: Will significantly increase the percent of on-task behavior.
3. Experimental Hypothesis: Will have no effect on the rate of work productivity.
   Alternative Hypothesis: Will significantly increase the rate of work productivity.
4. Experimental Hypothesis: Will have no effect on the rate of appropriate and inappropriate verbal and physical behaviors in a nontreatment setting.
   Alternative Hypothesis: Will significantly increase the rate of appropriate and decrease the rate of inappropriate verbal and physical behaviors in a nontreatment setting.

Chapter II

LITERATURE REVIEW

As noted in Chapter I, behavioral and emotional problems of the mentally retarded are clinically significant ones that necessitate competent and comprehensive research and clinical application. The present chapter provides a critical evaluation of the currently available behavioral literature on treatment of aggression and related conduct difficulties of this clinical group. This behavior therapy literature, while reliably demonstrating suppression of aggressive and related problems of conduct in the mentally retarded through the use of externally managed punishment procedures, has numerous general and specific limitations. These limitations are discussed in terms of the therapy procedures used, the inclusion of informed consent, the nature and use of assessment data, the experimental designs employed, and the external validity of obtained results. As an alternative to this predominant practice of external management currently reflected in the behavioral literature, studies using self-management procedures with the mentally retarded are reviewed as background for the program evaluated in the current research.

Behavioral Treatment of Aggression in the Mentally Retarded

The available published behavioral literature describing treatment of verbal and physical aggression and related conduct problems in the mentally retarded was examined. Only those reports were considered that involved mentally retarded persons who, at the time of initiation of the behavior therapy program, were presenting clinically significant problems of aggression and related disruptive behaviors which, presumably, provided the justification for the intervention efforts.

A total of 38 articles was located which satisfied these selection criteria (see Table 1). The studies were evaluated both in terms of demonstrated efficacy in controlling the inappropriate behaviors and whether or not the following professional practice and ethical standards were met: (a) the intervention program is based on assessment data that provide the basis for the hypotheses concerning the functionality of the problem behaviors; (b) the intervention program includes specific procedures for developing, strengthening, and/or maintaining specific prosocial behaviors to replace the inappropriate behaviors; (c) the intervention program initially uses and evaluates the least intrusive or restrictive procedures prior to use of more intrusive ones; (d) if potentially intrusive procedures are used in the intervention program, informed consent is obtained prior to the use of such procedures;

Table 1

Summary of Therapy Procedures Used in

Treatment of Aggression in the Mentally Retarded

Procedure	Reference
Differential Reinforcement:	
DRO + TO[a]	Sewell et al. (1973)
DRO + TO + RC + PAC	Hall et al. (1973)
	Repp & Deitz (1974)
DRO + OC	Polvinale & Lutzker (1980)
DRI + TO	Vukelich & Hake (1971)
DRI + TO + RC	Perline & Levinsky (1968)
Self-management:	
SM + RT + DRO + TO	Harvey et al. (1978)
Negative Reinforcement:	
release of finger pressure	Mithaug & Hanawalt (1977)
removal of demands	Carr et al. (1980)
Extinction:	
behavior maintained by positive reinforcement	Martin & Foxx (1973)
Stimulus Change:	
environmental	Boe (1977)
	Murphy & Zahm (1978)
	Rago et al. (1978)

Table 1 (continued)

Procedure	Reference
Presentation of aversive consequences:	
aversive tickling	Greene & Hoats (1971)
electric shock	Ball et al. (1975)
	Brandsma & Stein (1973)
electric shock + DRO	Birnbrauer (1968)
verbal warning & suspension	Schutz et al. (1979)
water squirt	Gross et al. (1982)
Timeout:	
TO	Calhoun & Matherne (1975)
	Clark et al. (1973)
	Hamilton et al. (1967)
	Pendergrass (1971)
	Webster & Azrin (1973)
	White et al. (1972)
TO + DRO	Bostow & Bailey (1969)
TO + DRO + RC	Burchard & Barrera (1972)
TO + DRO + RC + OC	Peniston (1975)
TO + DRO + PR + OC	Foxx et al. (1980)
TO + DRI	Wieson & Watson (1967)
TO ribbon	Foxx & Shapiro (1978)

Table 1 (continued)

Procedure	Reference
Response Cost:	
RC	Axelrod (1973)
	Greene & Pratt (1972)
	Sulzbacher & Houser (1968)
RC + DRI + TO	Burchard (1967)
Overcorrection:	
OC	Foxx & Azrin (1972)
	Shapiro (1979)
OC + DRO	Davidson-Gooch (1980)

[a]The abbreviations refer to the following techniques; DRO--differential reinforcement of other behavior; TO--time-out from positive reinforcement; RC--response cost; PAC--presentation of aversive consequences; OC--overcorrection; DRI--differential reinforcement of incompatible behavior; SM--self-management; RT--relaxation training

and (e) the intervention program uses those procedures that best offer promise of long-term benefits (Gardner & Cole, 1982).

Therapy Procedures Used

Twenty-six of the 38 studies reviewed used behavior suppression (punishment) procedures in isolation or as the major intervention tactic. No information was included in any of these 26 studies which demonstrated the lack of effectiveness of less intrusive procedures. In fact, only eight of these reports made mention of the apparent ineffectiveness of other previously attempted procedures (Ball, Sibbach, Jones, Stelle, & Frazier, 1975; Brandsma & Stein, 1973, Burchard, 1967; Davidson-Gooch, 1980; Foxx, Foxx, Jones, & Kiely, 1980; Gross, Berler, & Drabman, 1982; Mithaug & Hanawalt, 1977; Shapiro, 1979). Even in these reports, the previously used approaches described often represented inadequate conceptualization of the client's problem. As an example, Shapiro supported his selection of an overcorrection procedure in treating a 5 1/2-year-old mentally retarded child's physical aggression and destruction of books and classroom materials with the comment:

> Previous unsuccessful attempts to alter these behaviors included mild punishment (making her stand in the corner immediately after ripping books) and redirection (getting her interested in an alternate activity). (p. 132)

Such procedures could hardly be viewed as acceptable

behavior therapy approaches. The more obvious procedure of shaping appropriate handling of classroom materials by means of positive reinforcement was not mentioned.

In addition to the 26 studies using punishment procedures as the major intervention procedure, seven other studies, although not relying solely on punishment, did include suppressive components within the therapy programs (Hall, Price, Shinedling, Peizer, & Massey, 1973; Harvey, Karan, Bhargava, & Morehouse, 1978; Perline & Levinsky, 1968; Polvinale & Lutzker, 1980; Repp & Deitz, 1974; Sewell, McCoy, & Sewell, 1973; Vukelich & Hake, 1971). Thus, 86% of the studies included use of some type of punishment procedure.

From a professional practice and ethical perspective, general use of such aversive and suppressive procedures to eliminate aggressive behavior, in the absence of procedures which systematically teach prosocial replacement behaviors, is unacceptable (Gardner & Cole, 1982). This position is supported by the practical observation that mere suppression of specific aggressive behavior provides no guarantee that appropriate behaviors will in fact begin to occur. It cannot be assumed that a mentally retarded person has other appropriate behaviors in his or her repertoire of sufficient strength to replace chronic aggressive behaviors (Barrett, 1977; Jansen, 1980; Touchette, 1978).

Even programs using such suppressive procedures as time-out (TO), when combined with an unspecified differential reinforcement of other behaviors (DRO) procedure, do not ipso facto insure development of replacement behaviors. In illustration, Bostow and Bailey (1969) used a combination TO & DRO procedure in a program designed to reduce the loud aggressive verbal behavior of a 58-year-old institutionalized mentally retarded woman confined to a wheelchair. On each occasion of inappropriate verbalizations, the physically disabled client was wheeled to a nearby corner of the day room, removed from her wheelchair, and placed on the floor. She remained on the floor for 2 minutes, after which a 15-second interval of silence was required before she was placed back in her chair. An escalating DRO schedule also was used to reinforce her for periods of remaining quiet. The therapists concluded:

> Ruth learned that if she simply sat quietly, most of her needs would be met in a short while. In addition, she would occasionally raise her hand and whisper a request to an attendent. (p. 33)

The intervention program indeed had been successful in suppressing the inappropriate verbalizations and noncompliance, but the DRO was not designed specifically to teach or strengthen appropriate modes of interpersonal interaction or of assuming responsibility. Rather, the woman was reinforced "after periods of remaining quiet." From the description she appeared to be afraid to verbalize

in a normal manner, resorting to "raising her hand and whispering a request." The creation of such "be still, be quiet, be docile" behavior features could hardly be viewed as meeting current professional or legal standards of behavior therapy programming (Winett & Winkler, 1972).

This emphasizes that the intrusiveness of any deceleration procedure cannot be judged solely in terms of its face characteristics, or in terms of descriptions of a procedure provided by writers who "create" such procedures. In illustration, Pendergrass (1971) used a brief TO procedure in an apparent attempt to reduce the aggressive behavior of a young brain-damaged child. The procedure, which on the surface appears to be only mildly intrusive, produced some totally unacceptable behavioral effects. The therapist observed that, "S gradually developed strong emotional responses of trembling and crouching when E called, 'Don't hit,' and that she consistently wet in the isolation chamber," and "spent long periods of time lying face down on the floor when not in TO" (p. 79).

A related professional, and perhaps legal, concern is that many of the procedures used to eliminate aggressive and other disruptive behaviors are potentially degrading and dehumanizing, reflecting little respect for the value and integrity of the mentally retarded individual. This feature, present in many of the studies reported, is illustrated in the following examples:

1. "Hassle Sessions" used with a 30-year-old profoundly retarded assaultive woman (Ball et al., 1975):

> At the first appearance of withdrawn and negativistic behavior...she wore the [electric shock] jacket and was required to sit on a chair with feet on the floor, head held up and hands resting on her thighs with fingers extended. If she started to rise, the experimenter insisted that she sit. If she refused, she was pushed back into the chair. (p. 227)

2. "Social Isolation" used with a 23-year-old severely retarded male (Foxx et al., 1980):

> Whenever Paul became aggressive...he was instructed in a neutral tone of voice to go and lie on his bed. If he failed to respond to the instruction, he was immediately escorted to his bed and instructed to lie down. If he still failed to comply, the two attendants manually guided him into a supine position. If he actively resisted, his extremities were held so as to make his resistive movements difficult....He was told that because of his aggressive act(s) he would be denied all social contact for 24 hours....Paul was then instructed to remove his outer clothing (he retained his undergarments and socks) and put on a white hospital gown....all of his toys, decorations, record albums, clothing, and so on were removed from his personal living area. Paul was then instructed to stay away from others. (p. 137)

A related efficacy consideration is that such suppression procedures, especially when used with the mentally retarded who, by definition, have a more limited repertoire of replacement behaviors, typically have only temporary effects. As stated by Jansen (1980):

> It is pointless to try to reduce or eliminate a maladaptive behavior, such as tantrums, without replacing it with an alternative response...If one attempts to reduce or eliminate a retarded client's maladaptive behavior without developing a functional substitute for that behavior, it is

> likely that the maladaptive behavior will reappear in a very short time. (p. 226)

Informed Consent

Informed consent and/or approval of a Human Rights Committee were reported in only three of the 38 articles: Ball et al. (1975) for use of electric shock; Mithaug and Hanawalt (1977) in a negative reinforcement procedure which used finger pressure applied to the bicepts of the client; and Repp and Deitz (1974) for use of a DRO in combination with TO, response cost, and presentation of aversive consequences. Examples of intrusive procedures used in the absence of informed consent (i.e., not mentioned in article) include: (a) removing a physically handicapped person from her wheelchair and placing her on the floor (Bostow & Bailey, 1969); (b) manipulating varying schedules of TO for extended periods of time in the absence of teaching prosocial replacement behaviors (Calhoun & Matherne, 1975; Clark, Rowbury, Baer, & Baer, 1973); (c) evaluating the credibility of an experimental hypothesis concerning the functionality of behavior for 165 15-minute sessions without any effort to replace the extinguished behavior with alternative prosocial behavior or to insure that the extinction extended beyond the therapy situation (Martin & Foxx, 1973); and (d) aversive tickling for 29 weeks without teaching alternative prosocial behaviors (Greene & Hoats, 1971).

Additionally, in a number of reports, the basis for selection of the intervention procedure was "for research purposes." It should be noted, however, that no clients in any of the studies were paid participants and none had volunteered for the research or were otherwise compensated. All were mentally retarded individuals, mostly severely and profoundly impaired, who were presenting severe problems in need of immediate effective treatment. None had given informed consent. Even if the client's guardian had provided informed consent (mentioned in only two of the studies), the clinician/researcher could not have indicated to the guardian that various of the suppressive procedures used in fact offered the best promise of resolution of the client's problems since, regardless of its effectiveness, suppression of excessive behavior in isolation hardly represents a satisfactory resolution of a client's problems.

It is also apparent that clients were used in a number of studies to test an experimental question quite unrelated to the client's problem. Studies by Clark et al. (1973) and Calhoun and Matherne (1975) illustrate this observation. Clark et al., in studying the suppressive effects of TO in continuous and intermittent schedules, used an 8-year-old retarded girl described as displaying "a large number of behaviors that were considered severely disruptive and/or dangerous to the other preschool

children" (p. 445). After demonstrating that a continuous TO schedule could produce suppression of the target behaviors, the therapists returned to less effective treatment conditions for 80 days and permitted the "highly disruptive and dangerous behaviors" to reappear. At the termination of the study, the problem behaviors were still occurring at an unacceptable rate, even though the investigators had previously demonstrated an efficient means of suppressing the behaviors. A similar tactic was used by Calhoun and Matherne in evaluating the effects of varying schedules of TO on suppressing the aggressive behaviors of a 7-year-old moderately retarded child considered "an extreme behavior problem." Even though the investigators presented data from previous studies that supported the relative efficacy of a continuous TO schedule, this schedule was not used until the 48th treatment session prior to which other less effective schedules had been investigated.

Assessment Data

One of the basic purposes of behavioral assessment is that of selection of intervention program components based on hypotheses about how characteristics of the client as well as environmental conditions and contingencies are related to the problem and its resolution (see Birnbauer, 1978; Ciminero, 1977; Goldfried, 1977; Goldfried & Sprofkin, 1976; Kanfer & Saslow, 1969; and Nelson & Hayes,

1979). Jansen (1980) stated:

> All learned behavior, adaptive or maladaptive, is maintained because it achieves some rewarding objective for the person exhibiting the behavior...Thus, assaultive, destructive, and self-injurious behaviors serve a meaningful purpose in the life of a severely retarded person. (p. 228)

A behavioral assessment would result in hunches about the "meaningful purpose" being served by a client's aggressive behavior and would identify intervention procedures designed to teach the person to attain this "rewarding objective" through more appropriate means.

Of the 38 studies reviewed, only six reported intervention procedures based on hypotheses generated from assessment data. Only three of these six included procedures designed not only to reduce the aggressive behaviors but also to strengthen prosocial alternative behaviors (Carr, Newsome, & Binkoff, 1980; Harvey et al., 1978; Wiesen & Watson, 1967). Carr et al. presented a detailed functional analysis of the behavior of two retarded children whose aggression appeared to be motivated primarily by escape factors. These data subsequently were used to eliminate aggressive behavior during teaching sessions and to initiate an imitation training program. Harvey et al. developed hunches about the functionality of the client's inappropriate behaviors and about environmental conditions assumed to influence the problem behaviors. These hunches were used as a basis for a

multicomponent intervention program. Wiesen and Watson hypothesized the inappropriate behavior of their client to be:

> The effect of an inadvertently established partial reinforcement schedule carried out unwittingly by harried attendant counselors who aperiodically reinforced Paul with prolonged attention. (p. 50)

The remaining three studies did make minimal use of assessment data, but did not include specific procedures to develop or strengthen replacement behaviors (Foxx et al., 1980; Martin & Foxx, 1973; Webster & Azrin, 1973).

Therapists, in six other reports, while commenting on the possible functionality of the client's aggressive behaviors, neither translated these speculations into intervention procedures nor provided justification for ignoring such pertinent client information (Ball et al., 1975; Birnbauer, 1968; Brandsma & Stein, 1973; Clark et al., 1973; Greene & Hoats, 1971; Vukelich & Hake, 1971). The remaining 26 studies made no mention of behavioral assessment data in devising the intervention procedures used or provided any rationale or justification for this omission.

The selection of intervention procedures, especially those procedures of a potentially intrusive nature, in the absence of environmental or client data violates even the most basic and elementary features of behavior therapy practice. Such research and clinical activities with real

clients with real problems in the absence of behavioral assessment data and without primary focus on effective resolution of the client's problems is inconsistent with legal, professional practice, and ethical positions.

Experimental Design

In evaluating the reliability of the data reported in the studies, certain deficiencies in experimental design are evident. Only Murphy and Zahm (1978) followed a treatment versus control group procedure in which residents were randomly assigned to either a Treatment Group (environmental improvement and behavior modification training) or an Environment Group (only environmental improvement). Another 23 studies did provide demonstration of a possible causal relationship between intervention and behavior change through either a reversal or a multiple baseline design. Most of these were treatment procedures used with single subjects or with small groups of subjects. Results reported in the remaining 14 studies represent therapy data (i.e., data which demonstrated only correlation between treatment and behavior change), although seven of these did replicate results across subjects. As might be expected, a majority of these studies reporting therapy data were published in the late 1960's and early 1970's, although five of them were published within the last 5 years (Davidson-Gooch, 1980; Foxx et al., 1980; Mithaug & Hanawalt, 1977; Murphy & Zahm,

1978; Polvinale & Lutzker, 1980).

In addition, specific design limitations such as those encountered in the Polvinale and Lutzker (1980) study were found. In this study, a "modified multiple baseline design across times of the day and settings" was used. The combined DRO plus social-restitution procedure was implemented in one setting, while DRO alone was introduced in the other setting for 3 days, after which the social-restitution was added. Although the differential effectiveness of DRO versus DRO plus social-restitution was said to have been assessed, the design used does not permit this. The basic feature of any multiple baseline design is the application of an experimental variable to one setting (behavior, person) while all other conditions are held constant, against which any changes can be evaluated (Baer, Wolf, & Risley, 1968). The present study introduced both procedures (DRO and DRO plus social-restitution) on the same day, rendering it impossible to evaluate the relative effects of each procedure against a constant. Therefore, it must be considered a modified AB design replicated across settings.

External Validity Limitations

The external validity of this research is discussed relative to subject characteristics, settings, and intervention procedures used.

Subject characteristics. The 38 studies were examined

in terms of (a) age, (b) sex, and (c) level of retardation. Seventy-one percent of subjects were under the age of 20 (i.e., 32% between 4 and 12 years old; 39% between 13 and 19 years old). Another 14% of the subjects were in their 20s, while only 15% were adults 30 years old and over. The male-female ratio was 62% to 38% respectively. Finally, of the 32 studies reporting level of retardation, only 10% involved mildly retarded subjects, while 31%, 33%, and 26% of the subjects were classified as moderately, severely, and profoundly mentally retarded respectively.

Settings. Seventy-four percent of the studies were conducted in institutional settings, 24% were located in classrooms, and only 2% were conducted in workshop settings. None involved a residential community setting.

Intervention Procedures. Table 1 provides a summary of the procedures used in the 38 studies. In evaluating the general practicality and applicability of these procedures, a number of inadequacies are noted. An example is the "victim control" (extinction) procedure described by Martin and Foxx (1973) in which the victim attempted to ignore all aggressive physical attacks of a 22-year-old moderately retarded woman. The authors noted:

> It is not feasible, in cases similar to Gail, to arrange for the ward staff to withdraw social reinforcement for agressive behavior. This treatment is much too dangerous for individuals functioning as victims because of the passive role they must assume during attacks. (p. 165)

In another illustration, Webster and Azrin (1973) noted that the "required relaxation" procedure, which requires an individual to go to bed for 2 hours following occurrence of physical aggression, would not be feasible with those persons who are so disruptive that they will not remain in bed without physical restraint. Seldom, if ever, would an explosive retarded individual who engages in physical aggression be willing to remain in bed for 2 hours without physical restraint. Thus, such a procedure would appear to have limited applicability. Further, such procedures as finger pressure to the biceps, 24-hour social isolation, or electric shock also have limited generalizability.

Using the criterion of similarity of studies to the conditions of application, it is evident that the results reported in the literature on treatment of aggression in the mentally retarded have limited external validity. Generalization must be limited to use of potentially impractical external punishment procedures with moderately to profoundly institutionalized males under the age of 20. The lack of information concerning the adult mentally retarded population living in the community is especially unfortunate considering the recent emphasis on deinstitutionalization and, as described earlier, the growing number of retarded individuals in the community presenting problems of aggression and related conduct

difficulties.

Summary of Findings

Analysis of the behavioral literature on treatment of aggression in the mentally retarded revealed a number of limitations. Of the 38 studies reviewed, 33 used external punishment procedures in isolation, as the major intervention tactic, or as one component of a treatment package. None presented data which demonstrated that less intrusive procedures had been found ineffectual. Few obtained informed consent/approval for use of the potentially intrusive procedures or utilized assessment data to select the intervention procedure. Although studies varied greatly in terms of the experimental designs used, much of the work represented early pioneer efforts and was of a case study nature. Finally, external validation of this research is limited to a narrow group of subjects and settings, with limited generalizability to noninstitutionalized mentally retarded adults.

As an alternative to such external intervention, analysis of studies using self-management procedures with the mentally retarded is presented.

Self-Management and the Mentally Retarded

A number of recent studies lend support to the potential efficacy of treatment programs that actively teach self-management skills to the mentally retarded (see Table 2). Studies are reviewed that have investigated the

Table 2

Self-Management Studies with the Mentally Retarded

Reference	Setting	Dependent Measure(s)	Procedure(s) Used	N	Level of MR	Age Group
Altman, Bondy, & Hirsch (1978)	Home	Weight	Self-monitoring of food intake and weight External reinforcement Energy expenditure	2	mild; moderate	adolescents
Bauman & Iwata (1977)	Home	Housekeeping behaviors	Self-scheduling of housekeeping chores Self-recording	2	mild	adults
Buford (1975)	School; home	Weight	Self-monitoring of weight Energy expenditure External reinforcement	15	moderate	children; adolescents
Burgio, Whitman, & Johnson (1980)	Experimental room	Self-instructional verbalizations In-seat, Off-task Performance measures Children's distractibility rating form	Self-instructional package	2	mild; moderate	children
Connis (1979)	Job settings	Independent task change	Self-recording Pictoral cuing External reinforcement Corrective feedback	4	moderate; severe	adults

Table 2 (continued)

Reference	Setting	Dependent Measure(s)	Procedure(s) Used	N	Level of MR	Age Group
Foreyt & Parks (1975)	Home; school	Weight	Self-monitoring of food and weight External reinforcement Stimulus control	3	severe	adults
Franzini, Litrownik, & Magy (1980)	Sheltered workshop	Temporal delay	Symbolic and live modeling Reinforced practice Experience with time passage Verbal prompting Persuasion External reinforcement Self-instruction	10	moderate	adolescents; adults
Frederiksen & Frederiksen (1975)	Special education classroom	On-task behavior Disruptive behavior	Self-determined token reinforcement	14	mild; moderate	children; adolescents
Gardner, Cleea, & Cole (in press)	Workshop	Talking-to-self Talking-to-others Stereotypic/motoric movements Production rate	Self-monitoring Self-evaluation Self-consequation Self-instruction	1	moderate	adult

Table 2 (continued)

Reference	Setting	Dependent Measure(s)	Procedure(s) Used	N	Level of MR	Age Group
Gardner, Cole, Berry, & Nowinski (in press)	Workshop	Inappropriate verbal behavior	Self-monitoring Self-evaluation Self-consequation Self-instruction	2	moderate	adult
Gumaer & Simon (1979)	School; home	Weight	Self-monitoring of weight External reinforcement Energy expenditure	11	moderate	adolescents
Harvey, Karan, Bhargava, & Morehouse (1978)	Sheltered workshop; residential setting	Violent temper outbursts	Self-monitoring of appropriate behavior External reinforcement Time-out for complaining or blow-ups Relaxational training Positive self-statements	1	moderate	adult
Heiman (1978)	Residential facility	Weight	Self-monitoring of weight Energy expenditure	15	mild; moderate	adults
Helland, Paluck, & Klein (1976)	Residential facility workshop	Work productivity	Self-delivery of reinforcement	6	mild; moderate	adolescents; adults
Horner & Brigham (1979)	EMR classroom	On-task behavior Disruptive behavior	Self-monitoring on-task behavior Self-reinforcement	2	mild	child; adolescent

Table 2 (continued)

Reference	Setting	Dependent Measure(s)	Procedure(s) Used	N	Level of MR	Age Group
Joachim (1977)	Residential facility	Weight	Self-monitoring of food intake and weight Weekly therapist contact	1	mild	adult
Johnston, Whitman, & Johnson (1980)	Experimental room	Problems completed Problems correct	Self-instructional package	3	mild	children
Knapczyk & Livingston (1973)	EMR classroom	Accuracy of assignments	Self-recording of task accuracy External reinforcement	13	mild; moderate	children; adolescents
Litrownik, Cleary, Licklitner, & Franzini (1978)	Experimental room	Standard setting responses	Self-standard setting	16	mild; moderate	children
Litrownik, Franzini, Geller, & Geller (1977)	Work training center	Delay choices made	Decisional self-control Temporal delay experience	20	mild	adolescents
Litrownik & Freitas (1980)	Experimental room	Beads strung	Self-recording of positive, negative, or neutral aspects of a bead-stringing task	30	mild; moderate	adolescents; adults
Litrownik, Freitas, & Franzini (1978)	Experimental room	Appropriate self-monitoring responses	Self-monitoring of consequences or problem completed	10	mild; moderate	adolescents; adults

Table 2 (continued)

Reference	Setting	Dependent Measure(s)	Procedure(s) Used	N	Level of MR	Age Group
Matson (1979)	Residential psychiatric facility	Negative statements	Self-recording of negative comments External reinforcement Modeling Instructions Performance feedback	1	moderate	adult
Matson (1981)	Outpatient clinic	Grocery-shopping skills	*In vivo* modeling Self-evaluation Feedback External reinforcement Instructions	10	mild	adults
Matson, Marchetti, & Adkins (1980)	Residential facility	Appropriate self-help behavior	Self-monitoring of weekly progress Self-evaluation Verbal prompting Modeling Manual guidance External reinforcement Shaping Fading Chaining	25	moderate; severe; profound	adults
Nelson, Lipinski, & Black (1976)	Residential facility	Face-touching Object-touching Talking	Self-recording of positive, neutral, or negative behavior External reinforcement	15	mild; moderate	adolescents; adults

Table 2 (continued)

Reference	Setting	Dependent Measure(s)	Procedure(s) Used	N	Level of MR	Age Group
Shapiro & Klein (1980)	Psychiatric hospital classroom	On-task behavior Disruptive behavior Task performance and accuracy	Self-monitoring of on-task behavior Self- and external reinforcement	4	moderate	children
Shapiro, McGonigle, & Ollendick (1980)	Psychiatric hopsital classroom	On-task behavior Disruptive behavior	Self-monitoring of on-task behavior Self- and external reinforcement	5	mild; moderate	children
Wehman, & Schutz, Bates, Renzaglia, & Karan (1976)	Sheltered workshop	Work productivity	Self-delivered reinforcement Self-determined reinforcement	3	mild; severe; profound	adults
Zegiob, Klukas, & Junginger (1978)	Residential facility	Nose-picking Head-shaking	Self-monitoring of inappropriate behavior	2	mild; moderate	adolescent; adult
Zohn & Bornstein (1980)	Sheltered workshop	Work productivity Work quality On-task behavior	Self-monitoring of work performance	4	moderate	adults

separate components of self-monitoring, self-evaluation, self-consequation, and self-instruction. In addition, a review of package approaches that include one or more of these self-management components is presented.

Self-Monitoring

Self-monitoring refers to the systematic observation and recording of some aspect of one's own behavior. Self-monitoring has been demonstrated to have both assessment and therapeutic utility in use with nonretarded clients presenting a range of target behaviors (McFall, 1977; Nelson & Hayes, 1981). The present section reviews its use with the mentally retarded.

Recent research has demonstrated that mildly to severely retarded individuals are capable of self-monitoring a wide range of behaviors within various settings. However, it appears that at least minimal training in self-monitoring is required for the retarded to acquire such skills. Litrownik, Freitas, and Franzini (1978), for example, found that moderately and severely retarded children did not spontaneously self-monitor when merely verbally instructed to do so. Yet, when exposed to a brief (1-hour) demonstration training program, a similar group of subjects was able to acquire, maintain, and transfer self-monitoring skills. Shapiro, McGonigle, and Ollendick (1980) also found, with a group of mildly and moderately retarded children (ages 7 to 12), that general

verbal instructions in self-monitoring were not sufficient for maintaining high rates of on-task behavior achieved in a token economy. However, when self-monitoring training was begun, on-task behavior immediately increased and remained at the previous high level.

A majority of studies that independently assessed reactivity of self-monitoring reported a therapeutic effect. Positive behavior changes reported include: (a) increased mean percent of housekeeping chores completed in two (nonretarded and mildly retarded) 20-year-old males (Bauman & Iwata, 1977); (b) increased proportion of beads strung in 20 moderately retarded adolescents and young adults (Litrownik & Freitas, 1980); (c) increased frequency of talking and decreased object-touching in 10 mildly to moderately retarded adolescents and adults (Nelson, Lipinski, & Black, 1976); (d) increased frequency of appropriate classroom verbalizations in four mildly retarded adolescents (Nelson, Lipinski, & Boykin, 1978); (e) decreased nose- and mouth-picking or head-shaking in two mildly and moderately retarded female adolescents (Zegiob, Klukas, & Junginger, 1978); and (f) increased work productivity in four moderately retarded adults (Zohn & Bornstein, 1980). Although Horner and Brigham (1979) reported initial increases in on-task and decreases in disruptive classroom behaviors in two mildly retarded boys with self-monitoring, the effects were short-term.

Reinstatement of self-monitoring following a return to baseline showed decreased on-task for both subjects and increased disruptive behavior for one subject. This led the authors to suggest that reactive effects of self-monitoring may be transitory with the mentally retarded, which is consistent with short-term and variable results reported with the nonretarded population (Mahoney, 1974; Thoreson & Mahoney, 1974).

Various writers have suggested that such differential reactive effects obtained with self-monitoring actually may be related to a number of factors (Hayes & Cavior, 1977; McFall, 1977; Nelson, 1977). Nelson et al. (1976) investigated the possible relationship between reactivity and valence of the behavior being observed. Fifteen mildly and moderately retarded adolescents and adults self-monitored face-touching (negative), object-touching (neutral), or talking (positive). Results indicated a significant increase in talking and significant decrease in object-touching, but a nonsignificant decrease (i.e., in only three of five subjects) in face-touching. Similar results were obtained by Litrownik and Freitas (1980) with 40 moderately and severely retarded adolescents and adults using a bead stringing task. Subjects who self-monitored finishing (positive) or red (neutral) significantly outperformed those who self-monitored not finishing (negative). Thus, it appears that valence of behavior can

influence the reactivity of self-monitoring. Further, these results would suggest that therapeutic benefits may be enhanced by having the mentally retarded self-monitor positive or neutral, rather than negative, aspects of their behavior.

The potential influence of client accuracy on reactivity of self-monitoring also has been examined. Most studies that evaluated accuracy reported high client-observer agreement (ranging from .80 to 1.00) (Bauman & Iwata, 1977; Horner & Brigham, 1979; Litrownik & Freitas, 1980; Litrownik et al., 1978; Nelson et al., 1976; Nelson et al., 1978; Zohn & Bornstein, 1980). However, even when low levels of client accuracy (below .35) were observed (Shapiro et al., 1980; Zegiob et al., 1978), self-monitoring produced reactive effects. These results, consistent with those found in the nonretarded literature, suggest that self-monitoring may have positive reactive effects even when self-recording is inaccurate (e.g., Herbert & Baer, 1972; Lipinski & Nelson, 1974). Nelson et al. (1978) further confirmed this notion of independence of reactivity and accuracy with their finding that self-monitoring training enhanced client accuracy but not reactivity in nine moderately and mildly retarded adolescents.

Self-Evaluation

Self-evaluation, or self-assessment, is the comparison

of one's own behavior to a set of standards to determine whether various aspects of performance meet these standards. Self-evaluation obviously requires that a set of criteria be established against which an individual can "measure" his or her own behavior. Standards may be self-imposed or externally-determined. Self-evaluation also implies initial monitoring (self or external) of the behavior, since a response first must be observed/labeled before it can be evaluated.

No study was found concerning the independent reactive effects of self-evaluation procedures with the mentally retarded. However, studies assessing the reactivity of self-evaluation used in combination with other procedures did report positive results with this clinical group. Frederiksen and Frederiksen (1975) found, within a token reinforcement system in a special education classroom, that self-evaluation plus teacher-consequation was as effective as teacher-evaluation plus teacher-consequation in increasing on-task and decreasing disruptive behaviors of 14 mildly and moderately retarded adolescents. Robertson, Simon, Pachman, and Drabman (1979) demonstrated that self-evaluation of behavior as "good," "okay," or "not good," which resulted in teacher-delivered and later self-delivered reinforcement, effectively maintained low levels of disruptive behavior in a special education class of 12 mildly to severely retarded children. Matson and his

colleagues used two other self-evaluation procedures within multicomponent training packages: (a) having moderately to profoundly retarded subjects assess (e.g., good, bad, OK) their own daily or weekly performance in wardrobe/nightstand maintenance or showering (Matson, Marchetti, & Adkins, 1980), and (b) having mildly retarded subjects self-evaluate their shopping performance as "okay" (no improvement), "good" (performing at least one more step than at any other session), or "very good" (two or more steps performed correctly) following shopping skills training (Matson, 1981). Although positive behavioral effects were reported in these studies, the separate effects of self-evaluation were not assessed independent of other procedures used. Thus, use of self-evaluation procedures may be a promising area, but there presently are no data that independently assess its reactivity with this population.

Similarly, little is known about the accuracy with which mentally retarded individuals self-evaluate their own behavior. In the Frederiksen and Frederiksen (1975) study discussed, self-evaluations correlated strongly with teacher-evaluations ($r = .8354$, $p < .001$), although self-assessments tended to be slightly more lenient (3 to 4%). Robertson et al. (1979) found that moderate student-teacher agreement (.69) during the initial self-evaluation phase rose to between .83 and 1.00 in subsequent phases. Thus,

preliminary results suggest that, with adequate training experience, mentally retarded individuals can learn to accurately self-evaluate their own behavior.

Self-Consequation

Self-consequation may be defined as self-determination and/or self-administration of positive or negative consequences. Self-determination includes (a) self-selection of specific positive or negative consequences of behavior (e.g., self-selecting a reinforcer), and (b) self-selection of a criterion for reinforcement or punisment (e.g., "I have to complete 10 work units before the buzzer rings in order to get my treat; if I don't finish, then no treat."). With the latter, the client determines "how much" of the specified behavior he or she must perform to obtain the reinforcement or to receive the punishment. In a preliminary investigation, Wehman, Schutz, Bates, Renzaglia, and Karan (1976) found that self-determined (self-delivered) reinforcement resulted in increased work productivity over externally-determined (self- or externally-delivered) reinforcement in a mildly and a severely retarded adult. Interestingly, the schedule of reinforcement maintained by the severely retarded subject was similar to that imposed in the previous conditions, while the mildly retarded subject reinforced himself on a continuous schedule. This concept also was evaluated by Litrownik, Cleary, Lecklitner, and Franzini (1978) in a

study designed to assess moderately retarded children's ability to set their own standards for performance. Results indicated that these retarded children could self-determine appropriate performance standards based on a social referent (model) or on their own past performance.

A more common self-consequation procedure is the <u>self-administration</u>, or self-delivery, of positive consequences (self-reinforcement) or negative consequences (self-punishment) following behavior. In self-reinforcement, an individual self-delivers something pleasant (e.g., candy, money, a token, self-praise) or removes something unpleasant (e.g., time spent on an aversive task is reduced, one's "frowning face" picture is removed from the work table) contingent on the occurrence of a desired behavior. Self-reinforcement is accelerative, as it increases the likelihood of the behavior which it follows. In self-punishment, the person self-delivers something unpleasant (e.g., self-criticism, an additional 10 work units, a "frowning face" sticker) or removes something pleasant (e.g., relinquishes a token, pays a fine, cancels a shopping trip) contingent on the occurrence of an inappropriate behavior. Self-punishment is decelerative, as it reduces the likelihood of the behavior which it follows. Notably absent from the mental retardation self-management literature are investigations of use of such self-administered aversive stimuli.

The behavioral effects of self-delivered positive reinforcement were independently assessed in only two studies, both within workshop settings. Helland, Paluck, and Klein (1976) used verbal instruction, modeling, and role-playing to teach moderately and mildly retarded adolescents/adults to self-deliver money or candy plus short self-compliments (e.g., "Very good, Sally") for a paper collating task. Self-reinforcement significantly increased work productivity and subject-experimenter agreement was high (.83). In the Wehman et al. (1976) study, self-delivered reinforcement increased work productivity over that observed during baseline conditions and, for two of three subjects, over external reinforcement conditions. For the third subject, a nonverbal, noncompliant, profoundly retarded adolescent, both self- and externally-delivered reinforcement increased work production by over 400% over baseline, although externally-delivered reinforcement produced slightly higher rates than self-delivered.

A majority of the studies used self-reinforcement in combination with other self- and externally-managed procedures. Horner and Brigham (1979), Robertson et al. (1979), Shapiro and Klein (1980), and Shapiro et al. (1980) all found continued maintenance of low levels of disruptive behavior and/or increased levels of on-task behavior when self-delivered reinforcement procedures were added to self-

retarded include (a) videotaped and live modeling, reinforced practice, experience with time passage, verbal prompting, social persuasion and reinforcement, and self-instructional procedures used to increase task persistence in five moderately retarded adolescents (Franzini, Litrownik, & Magy, 1980), (b) self-monitoring and self-evaluation, plus external social reinforcement, modeling, instructions, and performance feedback used to decrease negative self-statements in a 28-year-old moderately retarded woman (Matson, 1979), and (c) independence training which consisted of in-vivo modeling, self-evaluation, feedback, social reinforcement, and instructions used to train shopping behavior in 10 mildly retarded adults living in the community (Matson, 1981).

These and other such multicomponent programs lend support for the potential value of a package approach that actively teaches the mentally retarded client self-management skills. However, a limitation of this developing experimental and clinical literature is the lack of demonstration of the usefulness of these self-management packages with mentally retarded adults presenting chronic behavioral and emotional problems. Harvey et al. (1978) described one of the few such multicomponent packages, including a self-managed token program, an externally-imposed time-out, relaxation training, and positive self-statements, which virtually eliminated aggressive outbursts

in a 38-year-old moderately retarded woman in work and residential settings. A 1-year follow-up indicated maintenance of therapeutic gains. The therapists speculated that, although differential effectiveness of individual components of the package were not assessed, the cognitive change procedures were important factors contributing to maintenance of the positive behavior change.

More recently, Gardner, Cole, Berry, and Nowinski (in press) used a self-management intervention package to modify the high-rate verbal aggression of two moderately retarded adults in a vocational training setting. In observation of these and other mentally retarded adults presenting various difficulties of verbal and physical aggression, inappropriate expression of anger, and other states of heightened negative emotional arousal, the writers suggested that these adults most often reacted impulsively to sources of internal and external arousal or provocation. There was little observed to suggest that these retarded adults engaged in self-management activities, or that these skills were in their repertoires.

Based on these observations, Gardner et al. (in press) taught subjects to <u>self-monitor</u> (observe, label), <u>self-evaluate</u> (label as "good Adult Worker" or "not Adult Worker"), and <u>self-consequate</u> (self-deliver a positive reinforcer or self-punish with a brief time-out and

response cost) their own work-related behavior. This self-managed intervention resulted in immediate and significant reduction in the target aggressive behaviors, and treatment gains were maintained during fading and at a 6-month follow-up.

An extension of this study to a second class of inappropriate verbalizations, that of disruptive verbal ruminations, was reported by Gardner, Clees, and Cole (in press). The intervention package that included training and in vivo practice of skills of self-monitoring, self-evaluation, self-consequation, and self-instruction, virtually eliminated chronic high-rate disruptive talking-to-self behaviors of a moderately retarded adult in a vocational training setting. In addition to influencing the specific dependent disruptive verbal rumination behaviors targeted for intervention, three collateral behaviors (talking-to-others, stereotypic/motoric movements, and production rate) not specifically treated showed positive effects. Follow-up data obtained 6 months and again 12 months after termination of the program revealed durability of intervention effects.

Summary of Findings

This literature provides encouragement for the use of self-management procedures with the mentally retarded. Results demonstrate that at least some mentally retarded individuals, ranging from mildly to profoundly retarded and

from children through adults, can learn various skills of self-management. Further, preliminary evidence suggests that these self-management procedures are as effective as, or more effective than, similar externally-managed procedures in facilitating positive behavior change and insuring maintenance of this behavior change. Such results obviously offer, independent of behavioral effects, additional economic, philosophic, legal, and professional implications.

However, although encouraged by this preliminary research, the available results are limited in nature, allowing only minimal generalizability to various subjects and settings. A majority of these studies have involved mildly and moderately retarded males, have been laboratory studies, or have dealt with relatively minor problems presented by children in the classroom. Only three studies (involving a total of four subjects) attempted to deal with severe and chronic behavioral and emotional problems of mentally retarded adults (Gardner, Clees, & Cole, in press; Gardner, Cole, Berry, & Nowinski, in press; Harvey et al., 1978). Although promising, these results obviously must be replicated and extended to increase the utility of self-management procedures with this particular clinically relevant group. The present investigation represents an extension of this previous work to mildly and moderately retarded adults who engage in such severe and chronic forms

of verbal and physical aggression that they are unable to be served by the presently existing vocational training system.

Chapter III

METHODOLOGY

Subjects

Three male and three female mildly and moderately mentally retarded adults (22 to 44 years old), served by the Rehabilitation Services Center of the University of Wisconsin Waisman Center on Mental Retardation and Human Development, were studied. Four of the subjects lived in the community with their parents or foster parents, and two resided in a regional residential facility for the mentally retarded. All subjects displayed and had histories of chronic and severe behavioral and emotional problems. Although all had been provided previous vocational training within various rehabilitation programs, as well as a variety of psychiatric, drug, and psychological treatment experiences, none had demonstrated desired progress in such programs. Thus, all subjects presented clinically significant behavioral and emotional problems involving physical and verbal aggression and similar conduct difficulties that precluded placement in or had resulted in dismissal from community vocational rehabilitation programs. The six subjects were obtained from a larger group of clients served by the Center on the basis of (a) a diagnosis of mild or moderate mental retardation and (b) severity of behavioral and emotional difficulties. Although the

selection criteria did not include any specific psychiatric diagnosis, all had diagnoses of mental disorders as defined by DSM-III (1980) criteria. Table 3 presents a summary of subject characteristics.

The study was approved by a University of Wisconsin Human Subjects Research Committee. As no experimental procedures of a potentially damaging or intrusive nature were used, no formal informed consent procedure was followed. However, all subjects were informed of the program procedures and were paid participants.

Setting

The study was conducted within a vocational training workshop setting located in the Waisman Center on Mental Retardation and Human Development. Observation rooms with one-way windows and an audio-monitoring system permitted unobtrusive data collection on individual client verbal and physical behaviors in workshop and break room settings. In addition, low-light sensitive video equipment located in the observation rooms permitted video recordings of client behaviors as these occurred under various *in vivo* conditions.

Workshop sessions were held during two 75-minute morning periods 5 days per week, and two 75-minute afternoon periods 4 days per week. Two 15-minute breaks (morning and afternoon) and one 45-minute lunch period were held in an

Table 3

Subject Characteristics

Subject	CA	Diagnosis	Level	Residence	Previous Rehabilitation Status
1	22	Mental retardation; conduct disorder	Mild	Foster home	Unfeasible
2	44	Mental retardation; conduct disorder	Moderate	Residential facility	Unfeasible
3	34	Mental retardation; schizophrenia	Mild	Foster home	Dismissed
4	25	Mental retardation; conduct disorder	Mild	Residential facility	Dismissed
5	25	Mental retardation; conduct disorder	Moderate	Home (parents)	Unfeasible
6	30	Mental retardation; conduct disorder	Mild	Home (parents)	Dismissed

adjacent break room. Workshop activities consisted of assembly of various small hardware and similar items used in local community workshops. All clients were skilled in the work activities required. Other adults with chronic disruptive behaviors were served in the workshop but did not participate in the current study.

Dependent Variables and Generalization Measures

Measures of four primary and collateral dependent variables were obtained for each subject:

Disruptive Verbal and Physical Behavior

Measures of the rate in the workshop of disruptive verbal and/or physical behaviors for each subject were obtained throughout all phases of the study. During Baseline conditions, the occurrence of each inappropriate behavior was recorded during four 4-minute time samples every 75-minute work period. Thus, each subject was observed for a total of 64 minutes during each full work day. Subjects' observational order was randomly prearranged each day. These data were obtained by observers stationed in the adjoining observation room.

During Self-Management conditions, total frequency measures were obtained on the work floor throughout the work day. Data were summarized daily for each subject as rate per minute and obtained by dividing the total number of daily occurrences by the total number of minutes observed.

The specific target inappropriate verbal and physical behaviors for each individual subject were determined prior to initiation of the study and were based on observation and clinical behavior analysis of the particular problems presented by each. Target disruptive behaviors for each subject are listed in Table 4. Formal definitions of each of these inappropriate behaviors were developed to insure high inter-observer agreement. These specific definitions for each subject are presented in Appendix A.

On-Task Behavior

On-task behavior, defined as hands moving, reaching for or touching work parts, and actively involved in completion of a work unit, was measured by an interval recording procedure. Measures of on-task behavior in the work setting were obtained throughout all phases of the study during 4-minute time samples as described above. Observers were cued by an audible "beep" which sounded every 15 seconds. Each subject was scored as on-task (+) or off-task (0) at the cue, for a total of 16 on-task/off-task ratings per sample and 64 per day. Data were summarized for each subject as daily percentage on-task.

Work Productivity

Work productivity was defined as the number of work units completed per minute during each work day. Following each 75-minute work period, workshop staff counted and recorded the total number of work units completed by each

Table 4

Disruptive Verbal and Physical Behaviors

S#	Disruptive Behavior	
	Verbal	Physical
1	Verbal Aggression	Physical Aggression
2	Complaints Verbal Aggression Disconnected Speech	
3	Disconnected Speech Verbal Rumination (bizarre talking-to-self) Verbal Aggression	
4	Provoking; Teasing Others Repetitive Verbalization Disruptive Verbal Noises	Physical Aggression
5	Whining and Crying Verbal Rumination (disruptive talking-to-self) Repetitive Verbalization Interrupting Conversation	Elopement Physical Aggression
6	Verbal Aggression Disconnected Speech	Physical Aggression Elopement

subject. The daily rate was obtained by dividing the total number of work units completed by the total number of minutes worked.

Generalization Measures

In addition to these dependent measures obtained in the workshop setting where intervention occurred, measures of generalization of intervention effects were obtained in the break room. Both inappropriate verbal and physical behaviors for subjects as defined above, as well as appropriate verbal and physical behaviors served as the generalization measures. Appropriate verbal behavior was defined as any speech that included content denoting positive regard for person(s), place(s), activity(ies), or object(s). Appropriate physical behavior was defined as any physical action that denoted positive affect (e.g., smiling following being praised for prosocial interaction). Data were obtained for each subject during a 3-minute time sample during each break and lunch period throughout the day. As in the workshop, each occurrence of the target behavior was recorded during each 3-minute sample. Data were summarized daily for each subject as rate of occurrence per minute and obtained by dividing the total number of daily occurrences by the total number of minutes observed. The order of observation of each subject was randomly prearranged each day.

Observation and Interobserver Agreement Procedures

Graduate students in the behavioral sciences served as observers in the present investigation. Independent observers were trained to identify target behaviors to a criterion of .80 or higher interobserver agreement. Interobserver agreement checks were obtained across all phases of the study. The interobserver agreement coefficient between two independent observers for frequency data was determined by dividing the smaller recorded frequency by the larger frequency (Haynes, 1978). The interobserver agreement coefficient between two independent observers for interval data was determined by dividing the number of agreements by the number of agreements plus the number of disagreements (Haynes, 1978).

Agreement between observers of work productivity measures was insured by having the workshop supervisor independently count and record work units completed by each subject. Disagreements were resolved by recounting of completed work units.

Experimental Design

A combined multiple baseline across subjects and a modified changing criterion design was used to evaluate the main effects of treatment (Hersen and Barlow, 1976; Kratochwill, 1978). Six within-subjects experimental conditions were included: Baseline, Self-Management Training (SMT), Self-Management (SM), Self-Management

Maintenance (SMM_1), and Maintenance Probe. Following the probe, Self-Management Maintenance (SMM_2) was reinstated. The experimental design is represented in Figure 1. The changing criterion procedure, included to insure frequent in vivo experiences with the self-management components and to provide gradual withdrawal of these program components, was used during SM and SMM conditions. During these phases, the initial criterion for reinforcement (i.e., length of consecutive time working without inappropriate behavior) was gradually increased. A static wage of 30¢ per hour was maintained across all criterion changes. Following Baseline, treatment phases were sequentially introduced to groups of two subjects according to a multiple baseline procedure. The use of groups of subjects, although not a requirement of the multiple baseline design, was followed in order to decrease threats to internal validity and to increase generalizability (external validity) of findings (Hersen & Barlow, 1976; Kelly, 1980).

Experimental Conditions

Baseline

Baseline conditions in the workshop and break room were designed to simulate community and residential-based vocational training programs. Subjects were informed of what was expected of an adult worker in each setting. Each subject received 30¢ per hour for workshop attendance paid every 2 weeks by paycheck. In addition, workshop staff

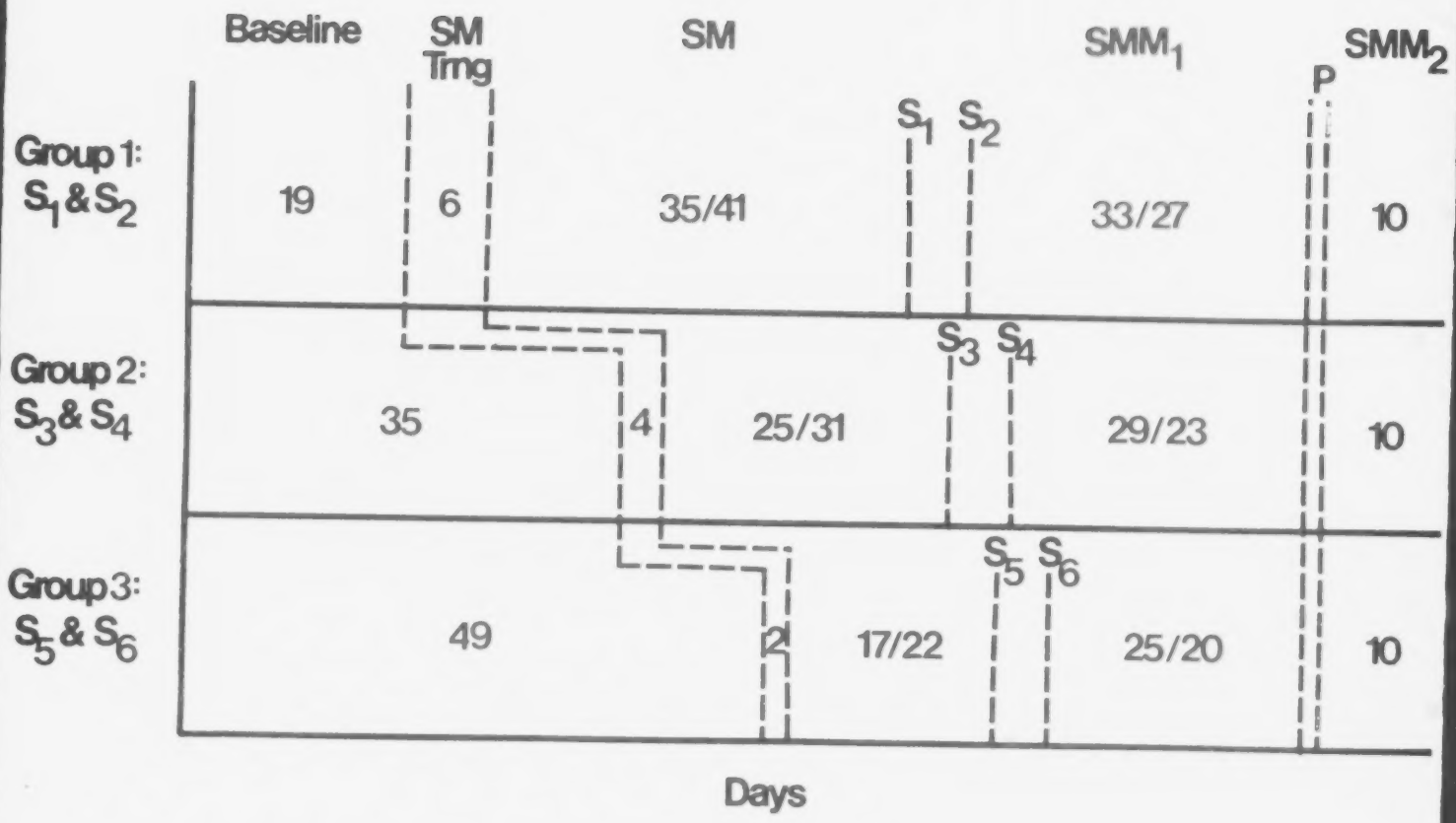

Figure 1. Experimental Design: Multiple baseline across groups of subjects

occasionally provided social praise contingent on such appropriate work-related behaviors as being on-task, working fast, following staff requests, displaying positive affect, and ignoring provocative comments from peers.

Inappropriate behaviors in the workshop of each subject generally were ignored with the following exceptions:

1. Out-of-Seat: Staff physically guided the subject back to his/her chair without comment.

2. Excessive Disruption/Aggression: When such behaviors were likely to create general disruption or to result in physical aggression (i.e., when they represented a potential threat to the safety of self or others), staff intervened and externally managed the outburst.

No staff were assigned to the breakroom during Baseline conditions. This procedure was followed to simulate an employee canteen in a community facility. When subjects became excessively disruptive or aggressive and posed a potential threat to the safety of self or others, staff intervened and externally managed the outburst. After order was restored, staff returned to the observation room.

All money earned was spent within the workshop economy system. On each pay day, subjects had the opportunity to spend their earnings on items available in the token store. The token store stock was extensive and representative of items available in community shops. Desired items not available could be ordered via a catalogue. Any earnings

not spent on each pay day were deposited in the person's savings account for future purchases.

In addition, savings account funds could be used by each subject to purchase edible items during each break/lunch period. Subjects without funds were informed of such and were encouraged to save money from their next paycheck for purchase of daily treats if they so wished.

Self-Management Training (SMT)

Following Baseline, Self-Management Training (SMT) sessions were conducted individually for each client. During SMT, clients remained on the same hourly wage and 2-week paycheck contingency system as described for Baseline. This was done to insure that subjects were not monetarily penalized for participating in training sessions. The initial training sessions were conducted in small training rooms adjacent to the workshop setting and later were moved into the workshop for in vivo practice. The primary investigator and three other graduate student research assistants provided the training. Length of training sessions varied with each subject, due to individual differences in attaining predetermined criterion, prior to moving to SM conditions. During training, each subject was taught to:

1. Self-monitor (observe, label) such work-related behaviors as working/not working, yelling/not yelling, singing loudly/working quietly, and teasing/not teasing.

Following presentation of specific behaviors via trainer modeling, the subject was prompted to label these (e.g., "Was I working or not working?", "Was I yelling or not yelling?"). The subject then was guided into role-playing various of the behaviors and self-monitoring these.

2. Self-evaluate his or her own actions (against externally-determined criteria). Each subject was presented, verbally and pictorally, the following set of expected Adult Worker Behaviors to establish a standard against which their behavior could be evaluated:

a. An Adult Worker starts working on time. "This means that when the buzzer rings at the beginning of the work period, you walk quickly to your work station and start working right away."

b. An Adult Worker looks at his/her work and keeps his/her hands busy working. "This means that you keep your eyes on your work parts and touch your work parts with your hands."

c. An Adult Worker works fast. "This means that you move your hands quickly to finish as many work units as possible, and as soon as you finish one work unit you start another one."

d. An Adult Worker sits in his/her chair for the whole work period. "This means that you sit in your chair from the time the buzzer rings at the beginning of the work period until the buzzer rings again at the end of the work period. You wait until break time to use the bathroom or to get a drink of water."

e. An Adult Worker uses self-control. "This means that you relax, stay calm, and talk about your problems when you're angry. You don't hurt yourself or others, throw things, or make angry gestures at others when you're upset."

f. An Adult Worker works quietly and ignores others who are not acting like adults. "This means that you don't talk to others during work time and you

mind your own business even when other workers are upset or teasing you. You don't yell, tease, complain, cry, talk loudly, or make any other noises that might disturb others who are working."

g. An Adult Worker follows staff instructions and requests. "This means that when a staff person asks you to do something, you do it right away and as quickly as you can."

h. An Adult Worker stops working on time. "This means that when the buzzer rings at the end of the work period, you get up from your work station right away and walk quickly to the breakroom."

These appropriate work-related behaviors were labeled by the trainer as "good Adult Worker" behavior and the undesirable behaviors as "not Adult Worker" behavior. Numerous workshop scenes first were presented via modeling for the subject to label and evaluate. The subject then was encouraged to role-play various behaviors and to evaluate his/her own actions as "good Adult Worker" behavior or "not Adult Worker" behavior.

In addition, each subject was provided a laminated 6 x 8 1/2-inch "good Adult Worker"/"not Adult Worker" display card to place in front of him or her at the work station. One side of the card was labeled "good Adult Worker" and contained a colored photograph of the subject smiling as he/she worked at his/her work station. The flip of the card was labeled "not Adult Worker" and contained a colored photograph of the subject frowning as he/she sat at his/her work station not working. Several opportunities in role-playing various behaviors were provided, with the subject intermittently labeling his or her own behavior (self-

monitoring) and assessing it as "good Adult Worker" behavior or "not Adult Worker" behavior (self-evaluation) using the display card as a visual cue.

3. Self-consequate his or her own behavior (i.e., to self-deliver a reinforcer or to self-punish with a brief time-out and response cost contingent on self-evaluation of his/her own behavior). The trainer demonstrated that a "good Adult Worker" monitors and evaluates his or her own behavior, and then pays him/herself for "good Adult Worker" behavior. A container of coins was placed on the subject's work table and he/she was instructed to clip a coin to the "good Adult Worker" side of the card. No coin was visible on the "not Adult Worker" side of the card. The trainer flipped the card several times to emphasize that "good Adult Worker" behavior (e.g., ignoring disruptive actions of others) earns money, while "not Adult Worker" behavior (e.g., yelling) does not.

Each subject also was provided a timer and was taught to set it independently. The subject was informed, "Whenever you decide to be a good Adult Worker until the bell rings, you'll earn a coin." The trainer initially modeled setting the timer for a specified interval (e.g., 10 minutes) and differentially consequating his or her behaviors: appropriate behavior resulted in the trainer taking the coin when the bell rang (i.e., at the end of the 10-minute interval) and placing it in a money board located

at the work station, while inappropriate behavior was consequated by immediately flipping the display card to the "not Adult Worker" picture at the moment of occurrence of the inappropriate behavior and stopping the timer. Thus, "not Adult Worker" behavior was consequated with a self-managed time-out (i.e., temporary loss of opportunity to work and earn money) and a response cost (i.e., loss of minutes of "good Adult Worker" behavior accumulated prior to occurrence of the inappropriate behavior). Each subject then rehearsed engaging in and labeling the behavior-consequence contingency.

4. Self-instruct appropriate behavior. Video and audio tapes of specific workshop scenes/sounds that were particularly provocative for each subject (e.g., a peer teasing, a staff member providing corrective feedback) were presented. Initially, the trainer modeled engaging in appropriate self-verbalizations under these provocative cues (e.g., "Ah, just relax...Self-control...I'm not going to yell at Duane. I'm going to be a good Adult Worker and ignore him"). Later the subject was prompted to use such self-instructional behaviors to maintain his/her own appropriate work behavior. Each subject was taught those specific coping skills most relevant to his/her own inapropriate behavior. During client rehearsal, the duration and intensity of the simulated provocation gradually was increased and the subject was encouraged to

speak more and more softly, with the ultimate goal of verbalizing covertly in the actual provoking situation.

In summary, the entire sequence of behaviors taught included: (a) taking a coin, (b) attaching the coin to the "good Adult Worker" display card, (c) placing the "good Adult Worker" card in front of him/her on the work table, (d) setting the timer for the correct interval (externally-determined), and (e) self-instructing appropriate work-related behavior. If the subject engaged in appropriate behavior throughout the time interval, he/she was encouraged to: (a) self-monitor (label), (b) self-evaluate (assess as "good Adult Worker"), and (c) self-consequate (self-deliver the monetary reinforcement) the appropriate behavior, and (d) initiate the sequence again. However, whenever inappropriate behavior occurred, the subject immediately was prompted to: (a) stop working, (b) self-monitor (label), (c) self-evaluate (assess as "not Adult Worker"), and (d) self-consequate (turn off the timer and flip over the display card) the inappropriate behavior, (e) self-instruct (label and rehearse) alternative appropriate behaviors and, when the subject decided that he/she was ready to begin working again, to (f) flip over the card to the "good Adult Worker" picture, (g) reset the timer, and (h) begin self-instructing appropriate work-related behavior.

An illustration of the training procedure following occurrence of an inappropriate behavior is provided:

T: Ron, what did you do?

R: I yelled at Joyce. (Self-monitoring)

T: Right. Is that good Adult Worker behavior or not Adult Worker behavior?

R: Not Adult Worker. (Self-evaluation)

T: That's right. What do you earn?

R: Nothing. (Subject flips over card and turns off timer.) (Self-consequation)

T: Too bad. You didn't earn any money for that new radio you want to buy.

R: No.

T: How does that make you feel?

R: Sad.

T: Are you proud of yourself?

R: No, I'm not proud of myself.

T: What would a good Adult Worker do?

R: Work quietly (puts finger to lips).

T: Good! So what are you going to do next time?

R: Ignore Joyce and work quietly. (Self-instruction)

T: Great, Ron! Show me how you tell yourself to work quietly.

R: I'm going to be a good Adult Worker and work quietly this time (demonstrates). (Self-instruction) Good! I'm doing it now. I'm working quietly! (Self-reinforcement)

T: Good worker, Ron! You are working quietly. I'll

> bet you're proud of yourself when you're acting like a good Adult Worker! Now when you're ready to be a good worker, flip over your card and reset your timer . . .

Prior to re-entering the workshop setting, each subject was required to complete five consecutive successful trials of all of the steps in the behavior sequence. A representative training program is included in Appendix B.

Each subject then resumed working in the workshop. The display card, timer, money clip, and money board were placed at the work station of each subject. Whenever inappropriate behavior occurred, the trainer prompted the subject through the above described sequence, correcting errors and labeling and praising appropriate responses. Since in vivo events such as a threatening gesture from a peer now frequently preceded inappropriate behavior, these peer interactions also now served as the basis for rehearsal of alternative self-management behaviors. Whenever possible, the peer(s) who provoked the subject participated with the subject in rehearsal of more appropriate behavior. Further, whenever these specific alternative prosocial interactions later occurred under real-life conditions, subjects were prompted to label and self-praise these.

Self-Management (SM)

During SM conditions, the trainer initially continued to verbally prompt the subject upon hesitation (e.g., to pay

him/herself, set the timer) or error (e.g., in setting the timer, failing to attach the coin to the display card) in the behavior sequence, and in self-instructing appropriate work-related behavior (e.g., "Tell yourself to work fast!"). In addition, staff intervened at the end of each successfully completed work interval (when the bell rang) and upon every occurrence of inappropriate behavior. In these instances, the subject was prompted to self-monitor ("What did you do?"), self-evaluate ("Was that good Adult Worker behavior or not Adult Worker behavior?"), self-consequate ("What happens to your timer?", "What do you earn?", and "Are you proud of yourself?"), and self-instruct ("Tell yourself what you're going to do next time!"). As in training, the subject rehearsed appropriate alternative behaviors upon the occurrence of inappropriate behavior. Trainer intervention gradually was faded as each subject demonstrated independence in the various self-management activities.

As stated earlier, the initial criterion for reinforcement--amount of consecutive time working without disruptive behaviors--was increased gradually from 10 minutes to 75 minutes (the entire work period) along with amounts of monetary reinforcement. As the criterion for reinforcement was increased, it eventually was possible for a subject to lose most or all of his/her earnings for the entire work period by engaging in a single inappropriate

response near the end of the period. Therefore, when the criterion for reinforcement for each subject reached 75 minutes, the response cost contingency was modified so that each occurrence of inappropriate behavior resulted in the loss of only 10¢ of the money which could have been earned that period. A static wage rate of 30¢ per hour was maintained across all criterion changes and each criterion change was communicated to the subject (e.g., "Cathie, now you'll set the timer for 20 minutes. Remember, if you decide to be a good Adult Worker until the bell rings, you'll earn the dime!").

In the break room, the experimental design required that Baseline conditions be continued throughout SM and all subsequent phases. However, as a result of the frequency and intensity of physical violence that occurred in the absence of staff supervision, a clinical decision was made to assign staff to the break room early in the SM phase. As this procedure introduced an uncontrolled source of influence on the dependent measures, the generalization question could not be assessed. Data collection in the break room setting was terminated at this time.

Self-Management Maintenance (SMM_1)

During this phase, the timer, the money board, and later the display card were removed. Each subject was informed that the criterion for reinforcement and the amount of reinforcement were identical to those in SM. Instead of

clipping money on the display card, the money remained in the container at the work station, available for the subject's management.

Maintenance Probe

Conditions during this phase were identical to those in the initial Baseline phase. Money containers were removed from the work stations prior to the subjects' arrival. Upon arrival at work, subjects were informed that they now could be good Adult Workers on their own and that their 30¢ per hour would automatically be credited to their accounts each work period.

Self-Management Maintenance (SMM_2)

Conditions during this phase were identical to those in the initial SMM_1 phase.

Data Storage and Analysis

A computer terminal, available within the setting in which the study was conducted, permitted daily entry of all dependent and collateral measures into a computer file. A computer program, available in the Waisman Center Computer Facility, for observational data similar to that obtained in the current project, was modified to accommodate the specific data storage and analysis needs of the project. This computer program provided graphic display printouts of individual as well as group data throughout the study.

Two methods of data analysis were used. First, visual analysis of graphically displayed data was used in the

multiple baseline across subjects experimental design discussed earlier. Second, the nonparametric Wilcoxon matched-pair test for regression slope described by Marascuilo and McSweeney (1977) was employed to statistically evaluate treatment effects on target behaviors. For each of the experimental hypotheses stated earlier, a one-tailed test of significance between and/or within conditions ($\alpha < .05$) was used.

Chapter IV

RESULTS

The primary and collateral dependent variables in this study consisted of disruptive verbal and physical behaviors, on-task behavior, work productivity, and generalization measures. Prior to presentation of the results obtained for the hypothesis related to each dependent variable, interobserver agreement data are presented, and baseline data are examined to identify possible significant pretreatment trends.

Interobserver Agreement

Interobserver agreement checks were obtained throughout all phases of the study. Agreement between independent observers on the occurrence of disruptive verbal and physical behaviors ranged from .80 to 1.00 (mean = .95). Interobserver agreement for on-task behavior ranged from .87 to 1.00 (mean = .98). As previously described in Chapter III, discrepencies in calculating work productivity were resolved by recounting the completed work units. These discrepancies occurred very infrequently.

Baseline Data Analysis

A prerequisite to demonstration of treatment effects within a multiple baseline design is the absence of a significant trend in the predicted direction within the

nontreatment baseline phase. More specifically, for this study, no significant decrease in rate of disruptive verbal and physical behaviors and no significant increase in percent of on-task or rate of work productivity should be present across the baseline period. Both visual inspection of the graphically displayed data and a one-tailed Wilcoxon matched-pair test for regression slope were used to evaluate group measures of each dependent variable within the baseline conditions (Hersen & Barlow, 1976; Marascuilo & McSweeney, 1977).

Visual inspection of data displayed in Figures 2 through 10, as well as results of the statistical analyses of these data as presented in Table 5, demonstrate no significant trends during baseline on any dependent variable for any subject group except disruptive verbal and physical behaviors for Group 3. For this group, comparison of data obtained during the first half of baseline with randomized data of the last half showed a significant decrease in disruptive verbal and physical behaviors prior to treatment, $p < .05$ [$(TS)_3 = -5.4007$; (TS) critical < -1.645]. As previously noted in Figure 1, which depicts the multiple baseline design used, pairs of subjects remained in baseline for varying periods of time: Group 1 (Subjects 1 and 2) for 19 days; Group 2 (Subjects 3 and 4) for 35 days; and Group 3 (Subjects 5 and 6) for 49 days. Thus, since Group 3 remained in baseline for the longest

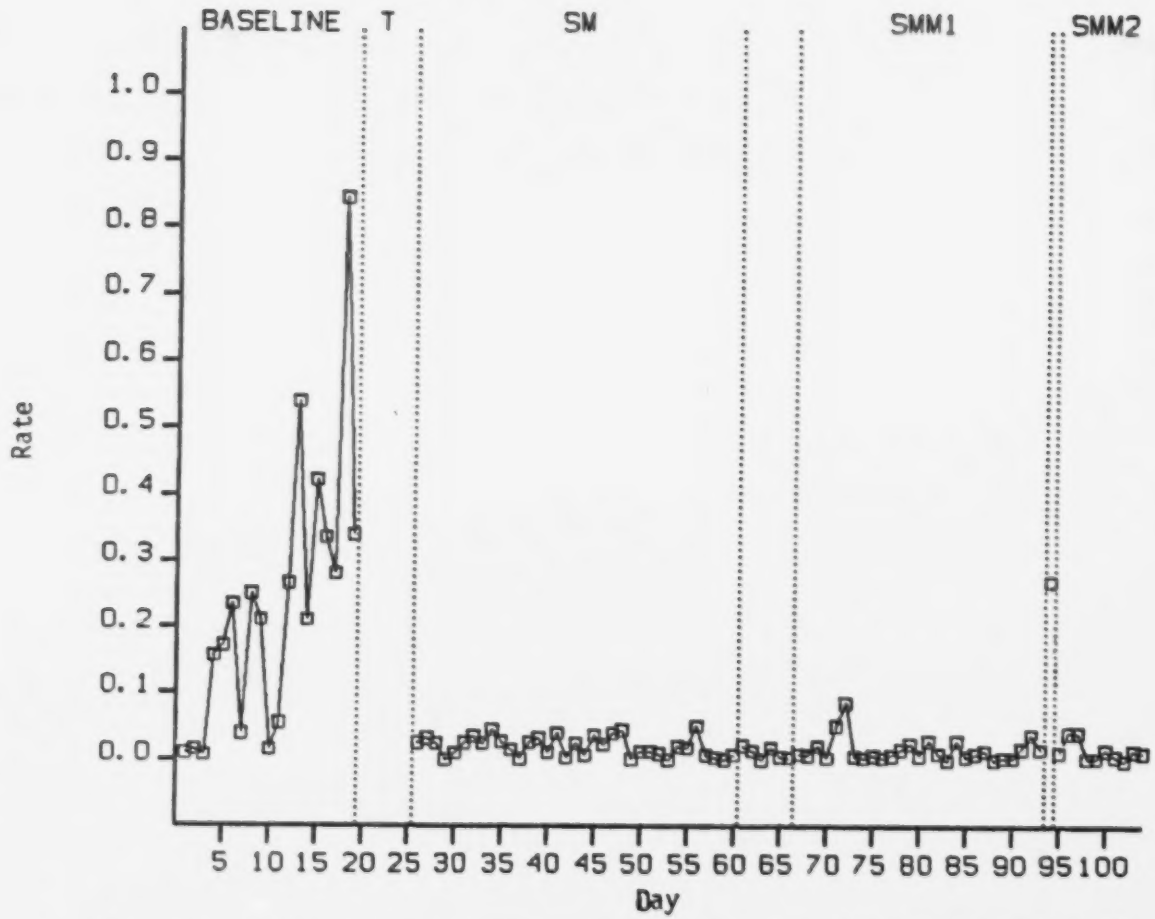

Figure 2. Daily rate of inappropriate verbal and physical behaviors for Group 1 (Subjects 1 and 2) during baseline, intervention, probe, and maintenance phases.

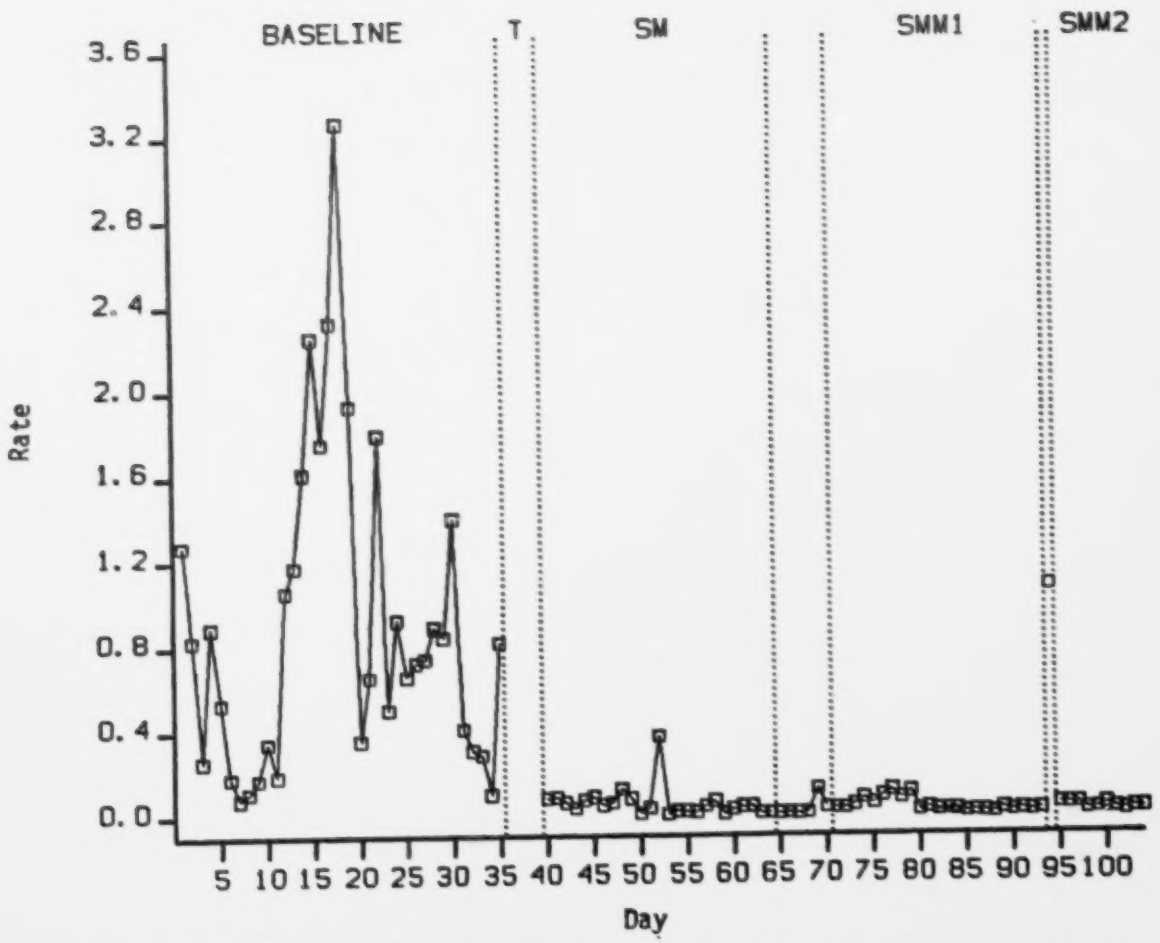

Figure 3. Daily rate of inapopropriate verbal and physical behaviors for Group 2 (Subjects 3 and 4) during baseline, intervention, probe, and maintenance phases.

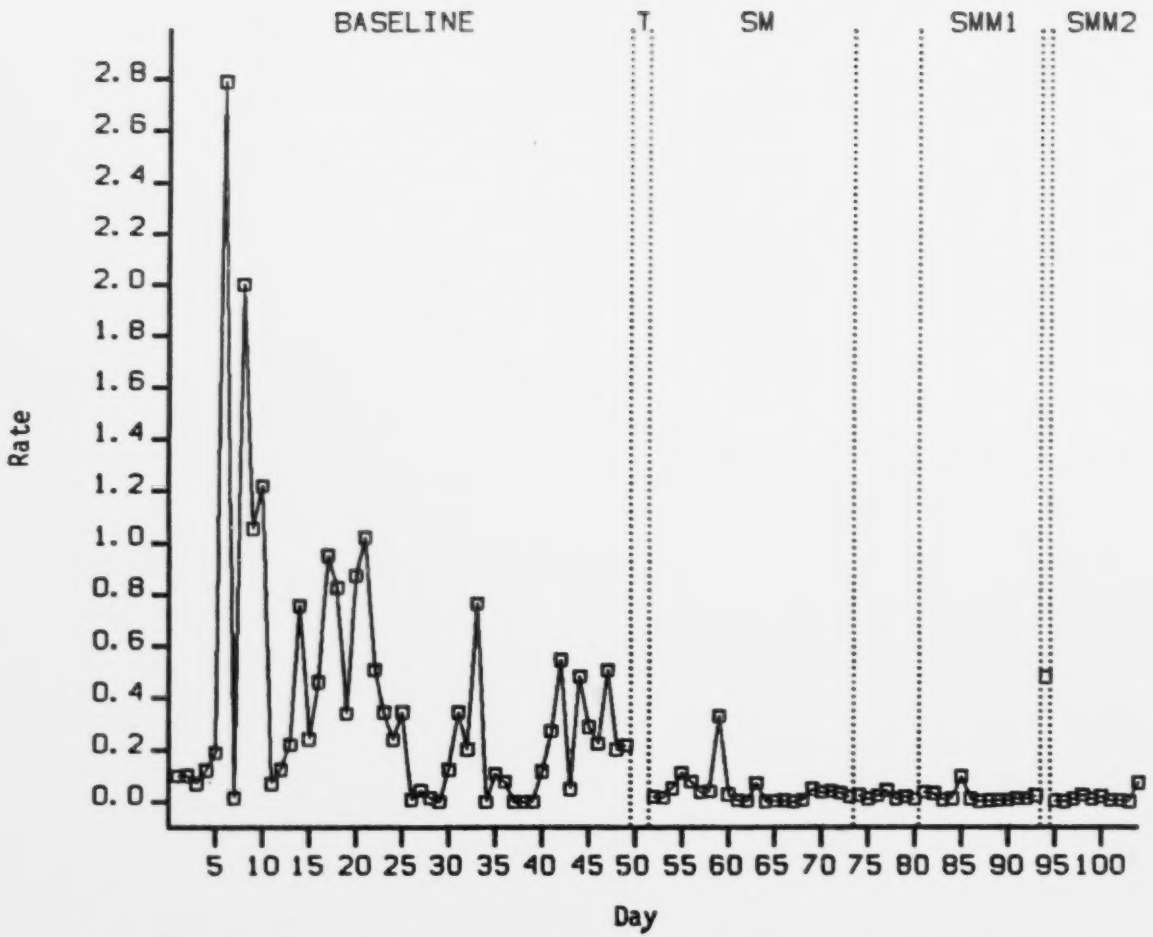

Figure 4. Daily rate of inappropriate verbal and physical behaviors for Group 3 (Subjects 5 and 6) during baseline, intervention, probe, and maintenance phases.

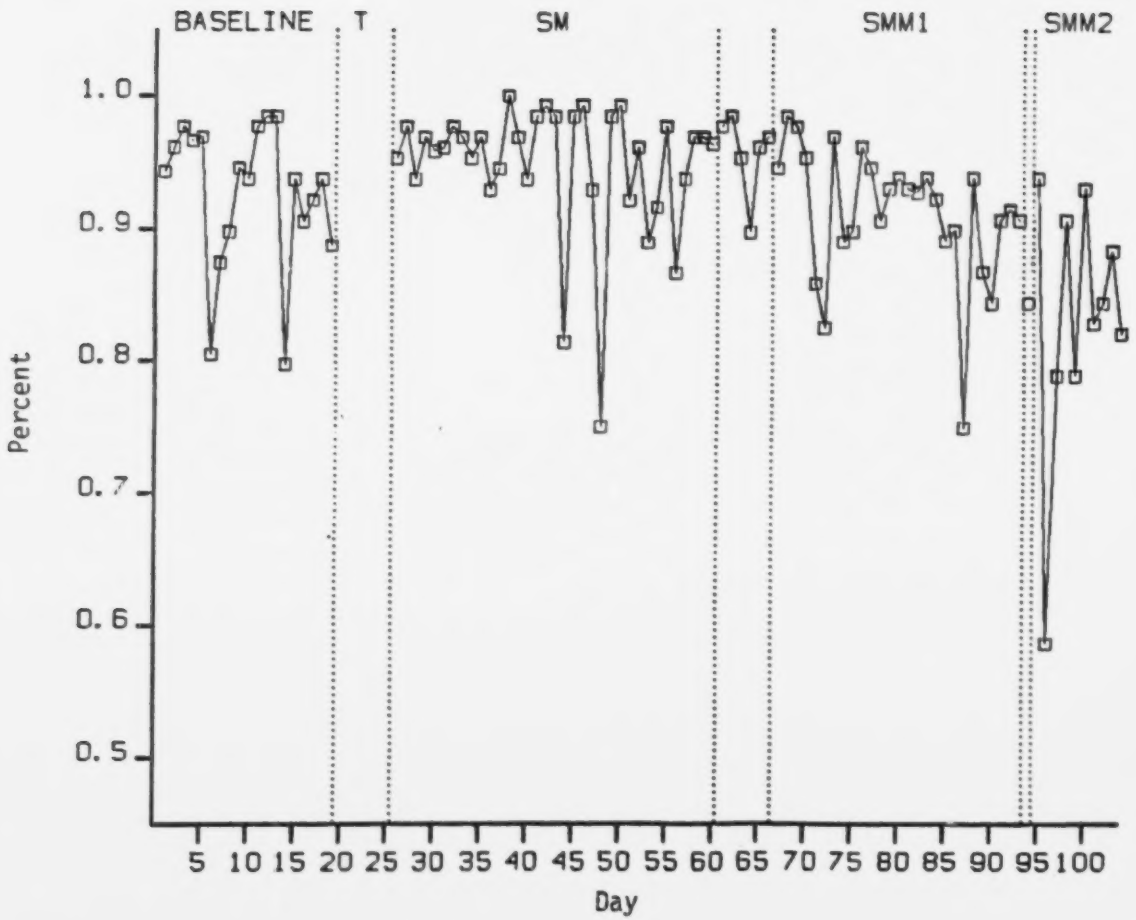

Figure 5. Daily percent of on-task behavior for Group 1 (Subjects 1 and 2) during baseline, intervention, probe, and maintenance phases.

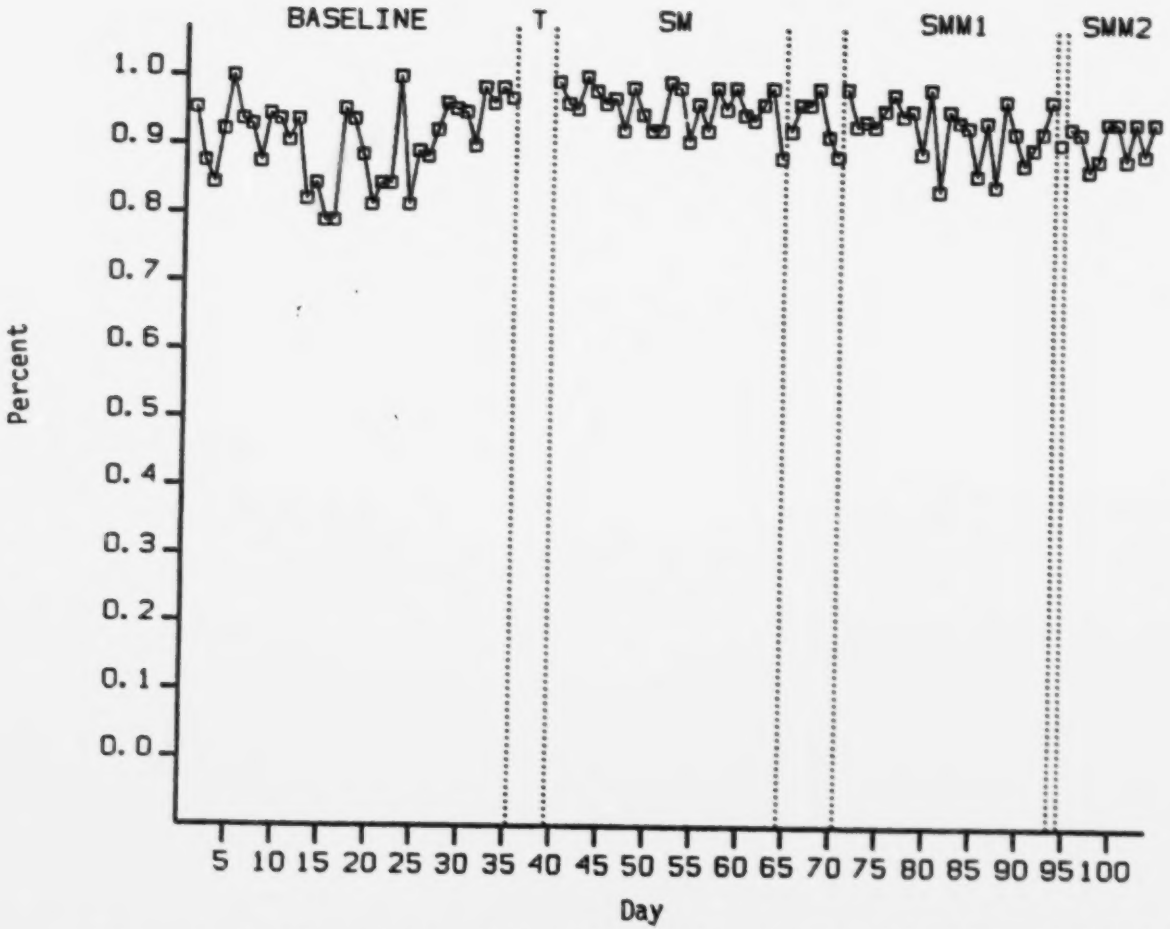

Figure 6. Daily percent of on-task behavior for Group 2 (Subjects 3 and 4) during baseline, intervention, probe, and maintenance phases.

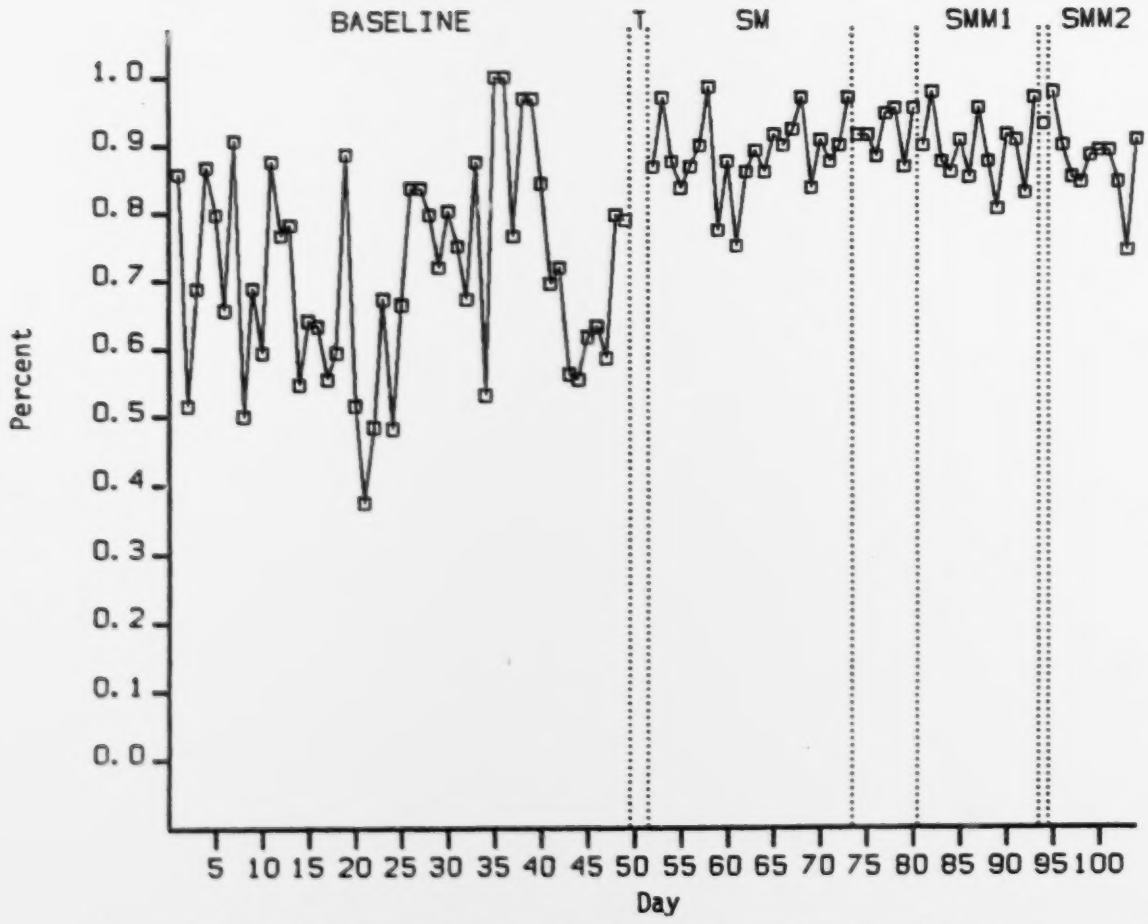

Figure 7. Daily percent of on-task behavior for Group 3 (Subjects 5 and 6) during baseline, intervention, probe, and maintenance phases.

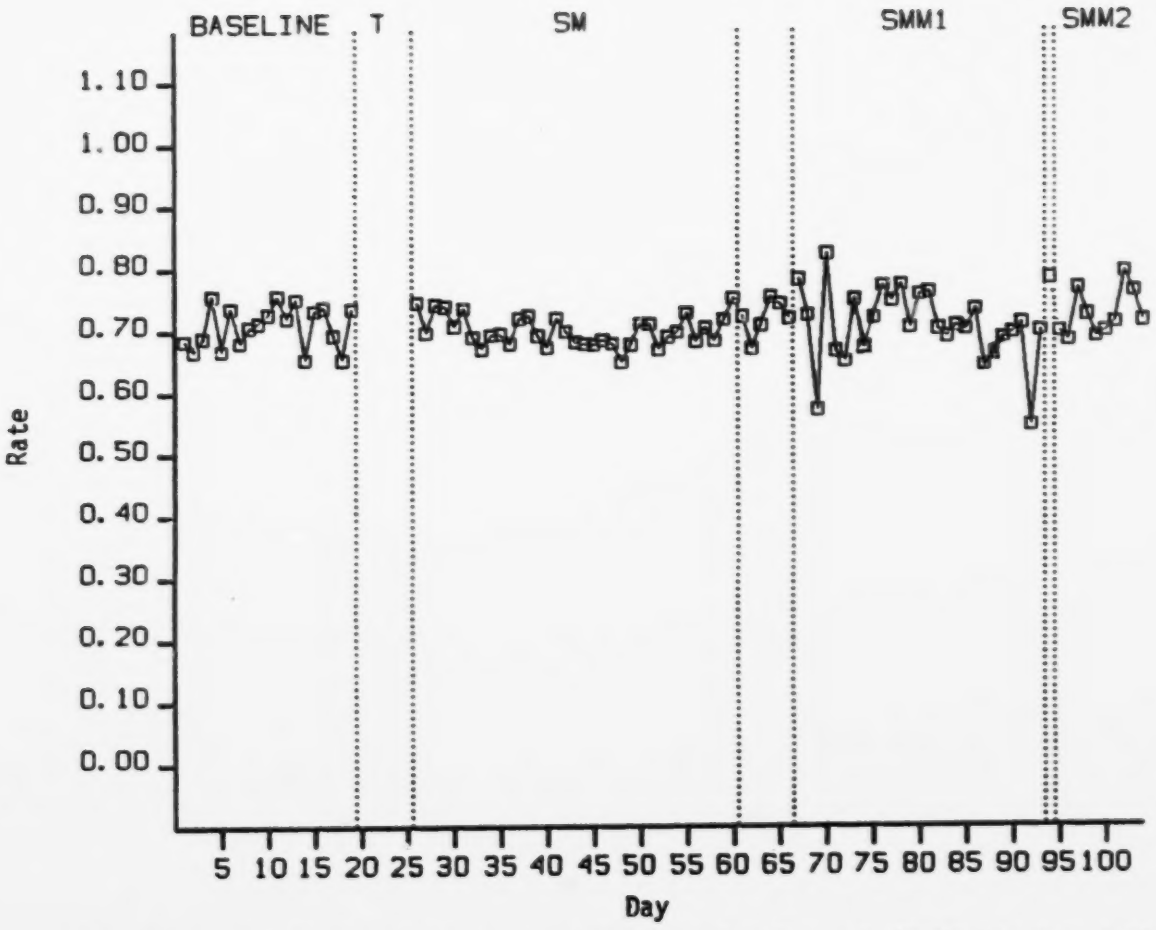

Figure 8. Daily rate of work productivity for Group 1 (Subjects 1 and 2) during baseline, intervention, probe, and maintenance phases.

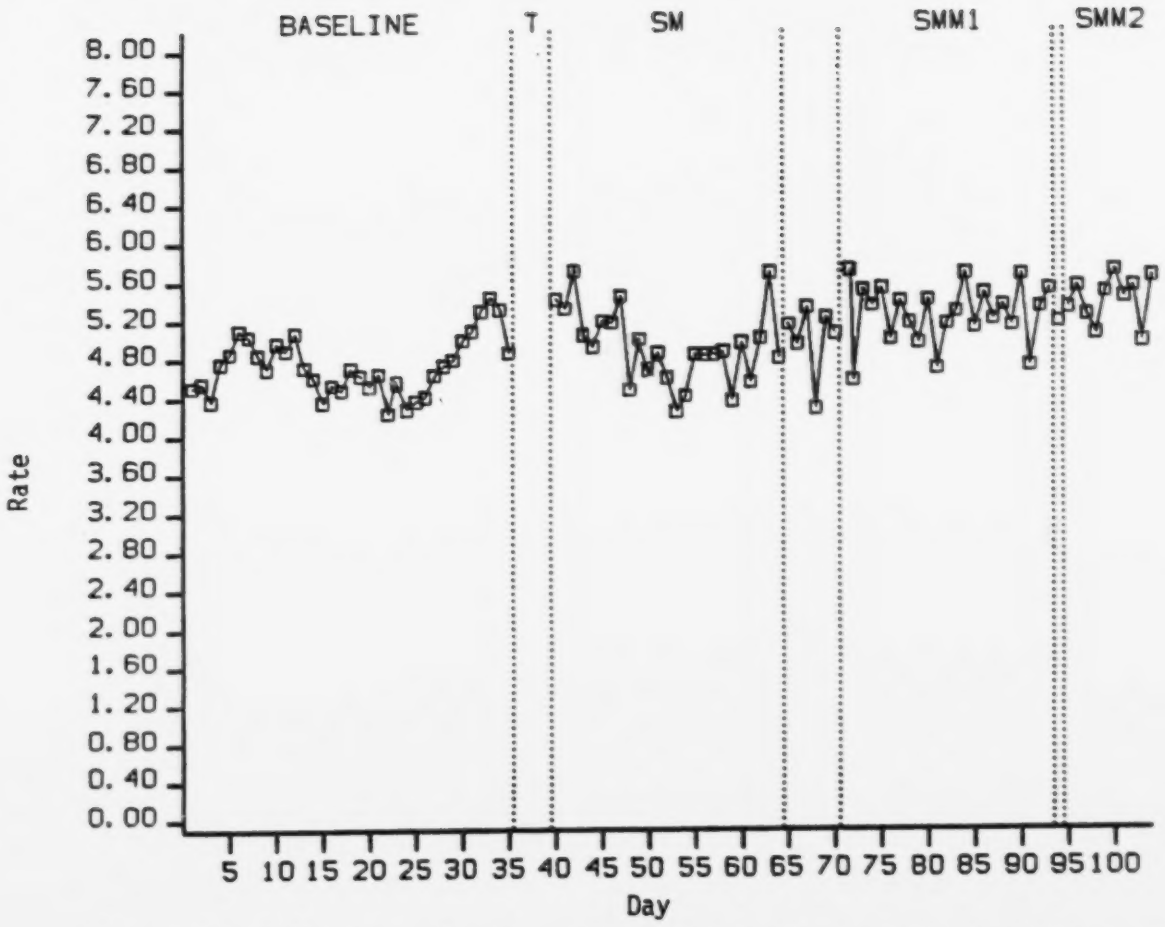

Figure 9. Daily rate of work productivity for Group 2 (Subjects 3 and 4) during baseline, intervention, probe, and maintenance phases.

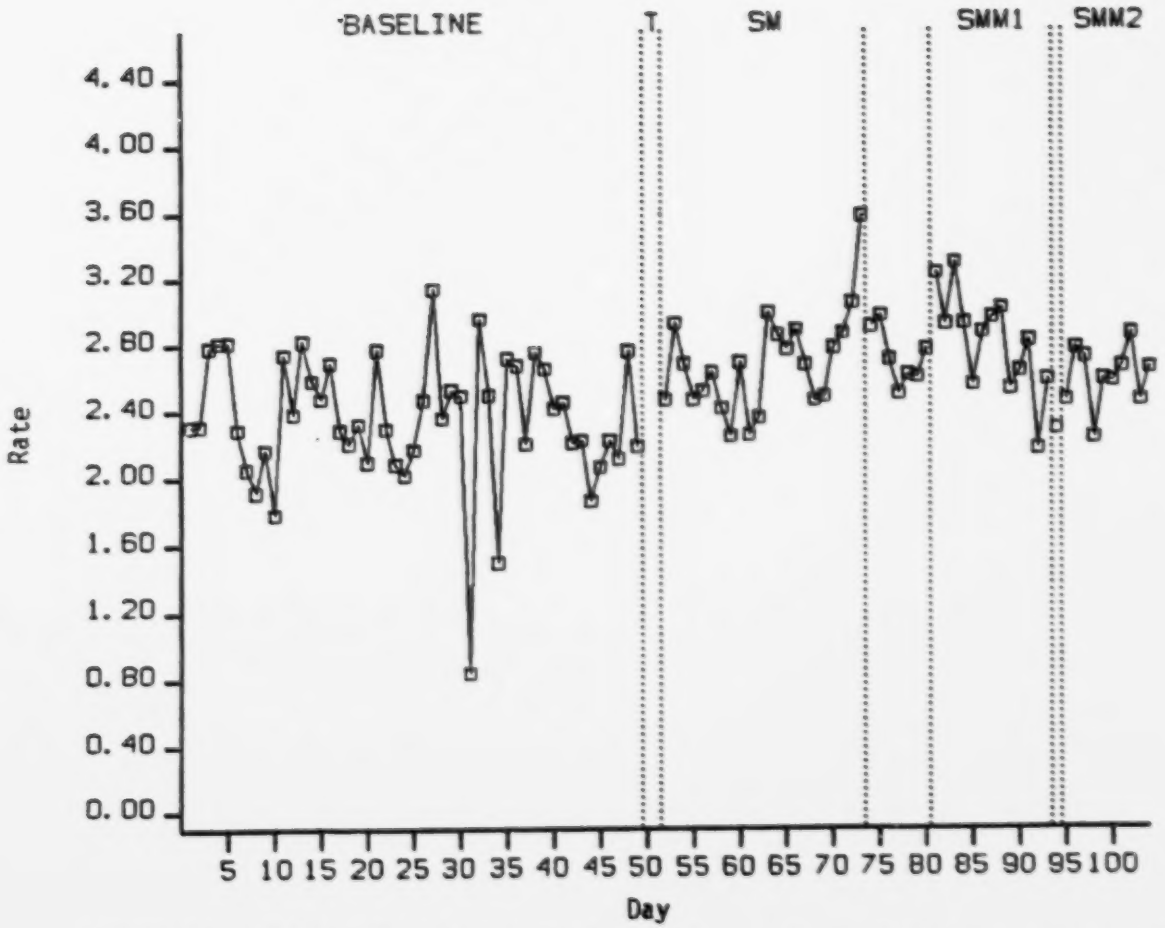

Figure 10. Daily rate of work productivity for Group 3 (Subjects 5 and 6) during baseline, intervention, probe, and maintenance phases.

Table 5

Test Statistics Obtained Using the Wilcoxon Matched-Pair Test for Regression Slope

Dependent Variables	Group	Baseline-First Half vs. Baseline-Second Half	Baseline vs. Self-Management	Baseline vs. Self-Management Maintenance	Hypotheses and Critical Values
Disruptive Verbal/Physical Behavior	1	2.8282	-3.3122*	-3.7418*	H_o: $\beta \geq 0$ H_1: $\beta < 0$
	2	-1.4297	-5.8888*	-5.6934*	
	3	-5.4007*	-2.7926*	-4.3471*	(TS) critical < -1.645*
On-Task Behavior	1	-1.2203	2.2355*	-1.6081	H_o: $\beta \leq 0$ H_1: $\beta > 0$
	2	1.0845	2.6431*	1.7827*	
	3	1.2621	3.0881*	3.6489*	(TS) critical > 1.645*
Work Productivity	1	1.0452	- .4713	- .7543	H_o: $\beta \leq 0$ H_1: $\beta > 0$
	2	.8577	2.1429*	4.0204*	
	3	- .6789	2.8714*	2.8121*	(TS) critical > 1.645*

period of time and entered treatment only after extended exposure to other subjects who already were participating in the program, further analysis of the first 19 days of the study was performed. This 19-day period represented the baseline period common to all subjects. No significant decreasing trend in disruptive verbal and physical behavior was found for Group 3 during these first 19 days of the baseline phase, $p < .05$ [$(TS)_3 = -.3787$; (TS) critical < -1.645]. Thus, there were no data to suggest that, in the absence of treatment, the dependent variables would have shown any improvement.

Disruptive Verbal and Physical Behaviors

Problem Statement 1: For mildly and moderately mentally retarded adults with chronic and clinically significant difficulties of conduct in a vocational rehabilitation setting, what are the effects of a multicomponent self-management training package on the rate of disruptive verbal and physical behaviors?

The null hypothesis derived from Problem Statement 1 was evaluated by visual inspection of the graphically displayed data and by a one-tailed Wilcoxon matched-pair test for regression slope. Group rates were compared from final days of baseline both to randomized initial days of SM and to randomized final days of SMM. Visual inspection of Figures 2, 3, and 4 reveals a dramatic and immediate decrease over baseline rates in disruptive verbal and

physical behaviors for each group of subjects upon introduction of SM conditions. These reductions appear to be maintained throughout the SMM phase. Statistical analyses confirmed the significant decrease from baseline to SM for all three groups, $p < .05$ [$(TS)_1 = -3.3122$; $(TS)_2 = -5.8888$; $(TS)_3 = -2.7926$; (TS) critical < -1.645]. This statistically significant declining trend in rate of disruptive verbal and physical behaviors also was maintained throughout SMM conditions for all three groups, $p < .05$ [$(TS)_1 = -3.7418$; $(TS)_2 = -5.6934$; $(TS)_3 = -4.3471$; (TS) critical < -1.645]. Thus, significant immediate and short-term treatment effects were observed for the disruptive verbal and physical behaviors of all subject groups. These effects were maintained during fading of treatment components in SMM for all groups.

In addition to these major analyses of interest, data obtained during the probe and SMM_2 phases also were examined. Visual inspection reveals an immediate and dramatic increase in disruptive behaviors for all three groups of subjects during the 1-day probe. Return to SMM conditions again produced immediate reductions in disruptive behaviors for all three groups.

On-Task Behavior

Problem Statement 2. For mildly and moderately mentally retarded adults with chronic and clinically significant difficulties of conduct in a vocational

rehabilitation setting, what are the effects of a multicomponent self-management training package on the percent of on-task behavior?

The null hypothesis derived from Problem Statement 2 was evaluated by means of visual inspection of the graphically displayed data and a one-tailed Wilcoxon matched-pair test for regression slope. Group percentages were compared from final days of baseline both to randomized initial days of SM and to randomized final days of SMM. Visual inspection of Figures 5, 6, and 7 reveals an immediate increase over baseline levels in percent of on-task behavior for each group of subjects upon introduction of SM conditions. These increases appear to be maintained throughout the SMM phase for Groups 2 and 3, but not for Group 1. Statistical analyses confirmed the significant increase from baseline to SM for all three groups, $p < .05$ [$(TS)_1 = 2.2355$; $(TS)_2 = 2.6431$; $(TS)_3 = 3.0881$; (TS) critical > 1.645]. This statistically significant increasing trend in percent of on-task behavior was maintained throughout SMM conditions for Groups 2 and 3, $p < .05$ [$(TS)_2 = 1.7827$; $(TS)_3 = 3.6489$; (TS) critical > 1.645]. No significant increase in percent of on-task behavior from baseline to SMM was found for Group 1, $p < .05$ [$(TS)_1 = -1.6081$; (TS) critical > 1.645]. Thus, significant immediate and short-term treatment effects observed for the on-task behavior of all groups, were

maintained during fading of the treatment components in SMM for two of the three groups.

Visual inspection of data obtained during the probe and SMM_2 phases reveals stable or slightly declining levels of on-task behavior for all three groups.

Work Productivity

Problem Statement 3. For mildly and moderately mentally retarded adults with chronic and clinically significant difficulties of conduct in a vocational rehabilitation setting, what are the effects of a multicomponent self-management training package on the rate of work productivity?

The null hypothesis derived from Problem Statement 3 was evaluated by means of visual inspection of the graphically displayed data and a one-tailed Wilcoxon matched-pair test for regression slope. Group rates were compared from final days of baseline both to randomized initial days of SM and to randomized final days of SMM. Visual inspection of Figures 8, 9, and 10 reveals steady or slightly increasing rates of work productivity for all groups from baseline to SM. These trends appear to be maintained for Groups 2 and 3 throughout the SMM phase, while Group 1 shows a slight decline. Statistical analyses confirmed the significant increases in work productivity for Groups 2 and 3, $p < .05$ [$(TS)_2 = 2.1429$; $(TS)_3 = 2.8714$; (TS) critical > 1.645], as well as the

nonsignificant change from baseline to SM for Group 1, $p < .05$ [$(TS)_1 = -.4713$; (TS) critical > 1.645]. This statistically significant increasing trend in rate of work productivity was maintained throughout SMM for Groups 2 and 3, $p < .05$ [$(TS)_2 = 4.0204$; $(TS)_3 = 2.8121$; (TS) critical > 1.645]. No significant increase in rate of work productivity from baseline to SMM was found for Group 1, $p < .05$ [$(TS)_1 = -.7543$; (TS) critical > 1.645]. Thus, for two of the three groups, the significant immediate and short-term treatment effects observed for work productivity also were maintained during fading of program components in SMM, while no significant trends were found for Group 1.

Visual inspection of data obtained during the probe and SMM_2 phases shows stable or slightly increasing levels of work productivity for all three groups.

Generalization Measures

Problem Statement 4. For mildly and moderately mentally retarded adults with chronic and clinically significant difficulties of conduct in a vocational rehabilitation setting, what are the effects of a multicomponent self-management training package on the rate of appropriate and inappropriate verbal and physical behaviors within a nontreatment setting?

As described in Chapter III, frequent and intense episodes of physical violence that occurred in the absence of staff supervision resulted in a clinical decision to

assign staff to the break room early in the SM phase. Since this obviously introduced an uncontrolled source of influence on the dependent measures, Problem Statement 4 could not be assessed. Thus, data collection in the nontreatment break room setting was terminated.

Summary

Analysis of baseline data showed no significant trends on any dependent variable for Groups 1 and 2. Only a significant pretreatment decrease in disruptive verbal and physical behaviors was found for Group 3. However, no significant trend was detected for this group during the initial 19 days of the study, before exposure to self-management intervention. Thus, there were no data to suggest that the dependent variables would have improved in the absence of treatment.

Analysis of treatment effects on disruptive verbal and physical behaviors revealed significant decreasing trends for all three groups. These effects were maintained during fading in SMM. A 1-day probe resulted in an immediate acceleration in disruptive behaviors, while introduction of SMM_2 again produced an immediate virtual elimination of the target behaviors for all three groups.

Analysis of on-task data showed significant immediate and short-term increases for all three groups. These effects were maintained during fading for Groups 2 and 3, but not for Group 1. Stable or slightly declining levels

of on-task behavior were observed during the probe and SMM_2 phases for all three groups.

Analysis of treatment effects on rate of work productivity revealed significant increasing trends for Groups 2 and 3 that were maintained during fading. No significant increases were found for Group 1. However, stable or slightly increasing levels of work productivity were observed during the probe and SMM_2 phases for all three groups.

Chapter V

DISCUSSION

This study was designed to investigate the effectiveness of a multicomponent self-management training package on the chronic and clinically significant conduct difficulties of mildly and moderately mentally retarded adults in a vocational rehabilitation setting. The training package represents an extension of earlier work completed by Gardner and his colleagues (Gardner, Clees, & Cole, in press; Gardner, Cole, Berry, & Nowinski, in press) to a different and more complex problem area. A discussion of each dependent variable used in the current study is presented. Limitations of the present research and implications for future research and applied practice are presented.

Disruptive Verbal and Physical Behavior

The results of the present study indicated that the treatment package did have an obvious and statistically significant effect on the chronic conduct difficulties of these subjects. For all subjects, initial introduction of the multicomponent self-management training package resulted in an immediate reduction in the rate of disruptive verbal and physical behaviors. Replication of these results with pairs of subjects on three separate occasions within the multiple baseline design provided

further support for the controlling effects of intervention. In view of the magnitude and immediacy of change, especially considering the intense and chronic nature of the target behaviors and their previous unresponsiveness to other intervention approaches, such effects may be regarded as highly socially significant. As noted earlier, each of the subjects had been provided a variety of psychiatric, vocational, and behavioral treatment programs without sufficient progress. As a result, each had been dismissed from community programs or, based on assessment, had been judged as unfeasible for placement in such programs.

In addition, prior to initiation of the current program, each subject had been provided a variety of individually designed behavioral programs involving the traditional deceleration procedures of time-out, response cost, verbal reprimands, removal of work, and extinction, combined with a token reinforcement program. Study of case records revealed no stable positive effects on the conduct difficulties from these externally-managed procedures. In fact, the records suggested that the confrontation involved in implementing such staff-imposed punishment contingencies most frequently resulted in intensification of the disruptive behaviors.

Again, the results of the current study are in vivid contrast with these clinically reported observations. The

self-management program, in shifting the responsibility to the subjects for monitoring, evaluating, and consequating their own behavior, seemingly removed or at least minimized the provoking aspect of staff intervention. Staff were trained to approach subjects in a calm and matter-of-fact manner during the SMT, SM, and SMM phases and to cue them to manage various difficulties. If a subject did become increasingly aroused upon staff intervention, staff provided the person cues to redirect his or her own behavior and to self-manage the consequation for such reactions. In only a few instances early in the training program did subjects balk at following the self-management procedure. In fact, although not measured empirically, a characteristic reaction to the occurrence of inappropriate behaviors was a spontaneous implementation of the self-monitoring, self-evaluation, and self-consequation procedure.

A related observation of interest was the frequency with which subjects spontaneously reported being pleased with "being a good Adult Worker". Although not evaluated quantitatively, staff in general reported the subjective impression of an obvious increase in positive affect, positive self-statements, and positive interactions with staff in the work setting.

These results also must be viewed relative to the published research concerning treatment of conduct

difficulties in the mentally retarded. Although the research previously reviewed potentially has only limited applicability to the subject population studied in the current investigation, the results of this study stand up well in comparison. High rate and clinically significant conduct difficulties were quickly reduced to infrequent occurrence in the treatment setting. Even if no more effective than externally-managed intervention procedures utilizing aversive components, the current intervention program with its relative emphasis on teaching subjects to self-manage their own behavior would appear to better meet the demands of social validation (Kazdin, 1977; Wolfe, 1978). That is, the self-management procedures would be more subjectively acceptable to staff, consumers, and consumer advocates.

Gradual fading of the external prompts (i.e., timer, display card, money board) during SMM_1 while continuing to provide subjects the opportunity to self-monitor, self-evaluate, self-consequate, and self-instruct, resulted in maintenance for all subjects of the behavioral gains observed during SM. The reader will recall that, by the end of this phase, the only program components remaining were the money container and the self-imposed response cost contingency. This finding also may be considered highly significant in view of the long-term, chronic nature of the problems presented. The fact that these six subjects, all

previously provided unsuccessful externally-managed programming, now were able to manage over time (with minimal external prompts) program requirements as well as their own interpersonal and emotional behaviors, offers obvious clinical and philosophic significance.

Although the question of maintenance was not a primary focus of the present study, final program components were removed to investigate maintenance of the positive behavioral effect achieved. This return to initial baseline conditions resulted in a disappointing reappearance of disruptive behaviors. In fact, although not immediate, removal of the money container and response cost contingency produced a gradual increase in disruptive verbal and physical behaviors to a level approaching their previous high rates and intensities. At this point, a decision was made by the clinical director to reinstate SMM conditions on the following day.

Reintroduction of the money container and response cost contingency the following day resulted in immediate decreases once again in the target behaviors. Although it was disappointing that subjects were unable to maintain low levels of disruptive behavior in the absence of external prompts, the probe and return to SMM_2 did provide additional demonstration of the controlling effects of intervention. Further, it is important to note that positive behavioral effects were easily regained, without

having to retrain subjects or reintroduce additional previously used program components. Even if future research is unable to make any progress beyond this point with these types of subjects, at least demonstration of effective and significant progress with such individuals with relatively unobtrusive intervention procedures has been provided.

On-Task Behavior

Results indicated that for all subjects, initial introduction of the training package resulted in an immediate and statistically significant collateral increase in the percent of on-task behavior, even though there was no specific treatment contingency for this behavior. Three sequential replications with pairs of subjects provided further confidence in these collateral results. These results appear to be related to the following: (a) as disruptive behavior of each subject decreased, the person had more time and effort to direct toward his or her work task; and (b) as the "good Adult Worker" role became more familiar, each subject began to value, or at least to be controlled by, the rule, "A good Adult Worker keeps his or her hands busy working."

Gradual fading of external program materials during SMM_1 resulted in maintenance of these behavioral gains for two of the three groups of subjects. Failure to maintain effects in Group 1 may have been due to several factors.

Most obviously, initial effects may have failed to maintain due to the lack of specific program contingencies directly targeting on-task behavior.

Further, upon visual inspection of the individual data for Subjects 1 and 2, it is apparent that Subject 1 contributed most to the decreasing trend in percent of on-task behavior during SMM. (Data for each individual subject are presented in Figures 11 through 28 within Appendix C.) Several possible reasons for this can be identified. First, on several occasions Subject 1 had expressed a desire to be assigned a new job task, specifically a janitorial position at the University of Wisconsin Hospitals located near the Waisman Center. This was a frequent topic of conversation and he often was observed daydreaming for extended periods of time at his work station. Thus, Subject 1's increased interest in janitorial work appeared to interfere with his on-task behavior and, as there was no specific contingency to influence on-task behavior, this may well have continued to interrupt such skills.

Secondly, on Day 67 of the study, Subject 1 was informed that his foster parents would be leaving for 3 weeks. Historically, this individual had been moved from one group or foster home to another and, more recently, such separations had resulted in major incidents of verbal and physical aggression. In fact, immediately prior to the

present study, he had been arrested for physical assault and only through a strong advocacy plea was he permitted to remain in the foster placement rather than being transferred to a residential facility. Informal observation of Subject 1 during SMM_1 revealed an increased level of agitation and preoccupation with his foster parents leaving. He frequently expressed concern that they may not return, and periods of daydreaming during work time increased. Thus, his foster parents' absence may well have been another contributing factor to Subject 1's decrease in on-task behavior during SMM.

Work Productivity

Of special significance to the vocational training setting was the statistically significant collateral increment in rate of work productivity for Groups 2 and 3 as disruptive verbal and physical behaviors declined. This increment was demonstrated and maintained although there were no specific treatment contingencies associated with production rate. Apparently, as each person's disruptive behaviors declined, with a corresponding decline in disruptive reactions from peers, these subjects directed more of their attention and effort to their work tasks. In addition, it is possible that work activities increasingly acquired greater secondary reinforcement properties as a result of their frequent association with the self-delivery of money following periods of being a "good Adult Worker."

Finally, such behavior also may have been facilitated by the self-delivery of positive self-statements contingent on work production. Although the intervention program provided no negative contingency for low work production, subjects were taught to self-label as "good Adult Worker" such actions as working fast.

As with on-task behavior, failure to achieve significance in Group 1 appears to be due primarily to the gradual but steady decline in production rate for Subject 1 (Figure 13). Possible contributing factors outlined in the previous section appear to be applicable here. However, despite lack of positive effects for Subject 1 on behaviors not targeted directly, significant reductions in the target disruptive behaviors were observed for this individual (Figure 11).

Generalization Measures

Although it was not possible to fully evaluate the question of generalization of treatment results to the untreated setting, visual inspection of data obtained prior to termination of the experimental plan offered little suggestion of a transfer of gains to this setting. In fact, there was an increase in the frequency and intensity of the disruptive behaviors. Much of this was instigated by individuals other than those participating in the study. However, contrary to subjects' reactions in the workshop where the program contingencies were in effect, in the

break room, subjects did not successfully self-manage alternative behaviors.

Limitations of Present Research

A major limitation of the present research is the lack of maintenance of treatment effects following removal of all program materials. This is especially significant given previous research results that suggest equal or enhanced durability of treatment effects using such procedures which actively teach skills of self-management. With self-management training, control over one's own behavior is assumed to reside within the individual rather than in the external environment. Therefore, theoretically, when external program materials are removed, positive behavioral effects should be maintained. That is, when exposed to external cues that previously controlled disruptive behaviors, subjects should mediate various self-controlling statements which result in desired behaviors (e.g., "I'm going to ignore David. I'm going to be a good Adult Worker.").

The failure to maintain treatment effects in the present study, which is in contrast with the previous research with subjects presenting less severe problems, emphasizes the chronicity and severity of aggressive and related conduct difficulties presented by this group of subjects. Although there was empirical evidence to suggest that these subjects had learned specific alternative self-

managed coping skills. these apparently were not of sufficient strength to compete with, in the absence of some type of external structure, those well-practiced patterns of inappropriate behavior under the provocative cues. Thus, a more gradual exposure or desensitization to specific provocative cues may offer more desired maintenance. Once desensitized, more extended periods of practicing self-management of these specific alternative coping skills, in the presence of the actual provocative cues, also may facilitate maintenance of treatment effects.

The failure of self-management skills, learned in the work setting, to generalize to the break room setting produces a second major limitation to interpretation of the training program's success. Lack of response generalization is conceptually inconsistent with the notion that self-management procedures teach subjects skills that they then may use in a variety of settings. However, such findings are quite commonly reported (Urbain & Kendall, 1980; Wahler, Berland, & Coe, 1979). It is obvious that, especially with the mentally retarded, there is a need for further study of the types of training which facilitate the learning and use of self-controlling mediational behaviors, both in training and nontraining settings.

Although the study demonstrated that treatment effectively influenced the chronic and clinically significant disruptive behaviors of these six mildly and

moderately retarded adults, the intervention package combined numerous self-management components: self-monitoring, self-evaluation, self-consequation (positive and negative), and self-instruction including cognitive rehearsal of coping skills. Since the current experimental design obviously does not permit isolation of the precise factors involved in the positive results obtained, any one or combination of self-management components included may have been responsible. In addition, redundant external cues (timer, display card, money board, money container) or the more specific self-delivered reinforcement and self-delivered punishment contingencies may have been contributing factors independent of the self-management components. Future research must examine the effects and relative efficacy of each of these separate program components.

Finally, the small sample size limits the external validity of the results. Although the characteristics of this sample appear to be quite similar in many respects to other populations of mildly and moderately mentally retarded adults, specific results of this study may be limited to the sample involved.

In summary, although not representing major questions addressed specifically, obvious limitations of this study are lack of maintenance and generalization of treatment effects. The presence of these limitations is in part due

to the exploratory nature of this investigation and the paucity of an established research base in this area. As more specific research questions are formulated and a body of knowledge develops, these limitations can be empirically addressed.

Implications for Research

The results obtained in this study highlight a number of areas of possible future reseach:

1. The behavioral effects of the self-management training package should be replicated with a similar but larger sample.

2. Procedures to enhance maintenance and generalization should be further developed. In addition to those outlined in the previous section, such procedures as training in several different settings, using several different trainers, lengthening the training phase, more gradual fading of program materials, and more *in vivo* training in specific problematic interpersonal situations should be included.

3. The various components of this training package (e.g., self-monitoring, self-evaluation, self-consequation, and self-instruction; the timer, display card, money board, and money container; the precise behavioral contingencies) should be evaluated separately to assess the relative contribution of each.

4. Researchers should explore the relative efficacy

of self-managed procedures versus similar procedures managed by external agents.

5. Finally, specific subject characteristics associated with differential responses to training in self-management should be examined.

Implications for Practice

In view of the high prevalence of severe conduct difficulties in the mentally retarded population and their contribution to interpersonal and vocational failure of these individuals, the results of this investigation are highly relevant for the vocational rehabilitation practicioner. The practical siginificance of the present study is emphasized in the relatively minor expenditure of staff training and monitoring time required. Following the initial training in the self-management procedures, only a short 30 to 60-second intervention was required for each occurrence of inappropriate behavior. These interventions were only infrequently required, especially during the latter phases of SMM_1 and SMM_2. Such investment of staff time obviously was much less than that required in prior attempts to externally manage these subjects' disruptive behaviors.

The additional conceptual and philosophic significance of the study resides in its effectiveness in reducing the chronic and intense disruptive behaviors of six mentally retarded persons in the absence of an externally-managed

program containing aversive-dependent deceleration procedures. The present study provides one of the few demonstrations of the successful modification of such behaviors in the absence of externally-managed punishment procedures. At a minimum the results suggest that chronic disruptive behaviors of mentally retarded adults can be reduced without the necessity of aversive deceleration procedures imposed by external agents.

Finally, the fact that the subjects were able to effectively manage aspects of their own inappropriate behaviors, independent of the effects that these self-management actions had on other of their behaviors, offers encouragement to the potential for development of more comprehensive rehabilitation programs for a range of behavioral difficulties presented by the mentally retarded.

Summary

Chronic and clinically significant conduct difficulties of mildly and moderately mentally retarded adults in a vocational rehabilitation setting were successfully reduced following introduction of a multicomponent self-management training package. Self-management skills of self-monitoring, self-evaluation, self-consequation, and self-instruction were trained and then practiced *in vivo*. In addition to influencing the specific dependent disruptive verbal and physical behaviors targeted for intervention, two collateral behaviors not

specifically treated showed positive effects for some subjects. A combined multiple baseline across groups of subjects and changing criterion design was used to assess changes throughout phases of the study. A 1-day probe and return to maintenance conditions provided further support for the controlling effects of treatment, although durability and response generalization of intervention effects were not demonstrated. Limitations of the present research, as well as implications for future research and applied practice, were discussed.

APPENDIX A

Target Disruptive Verbal and Physical Behavior
Definitions and Scoring Rules

Subject 1

A. Disruptive Verbal Behavior

Behavior #1: Verbal Aggression

Definition:

1) Any yelling, screaming, swearing, threatening, name calling, commanding, or any speech which connotes anger.
2) Any speech which is concurrent with physical aggression (see Behavior #2) and which connotes anger.

Scoring Rules:

a) Occurrences are separated by time (i.e., a 2-second duration of no Verbal Aggression separates occurrences).
b) Occurrences concurrent with Physical Aggression are scored separately.

B. Disruptive Physical Behavior

Behavior #2: Physical Aggression

Definition:

1) Physical contact with another person including hitting with hand or fist, kicking, pushing, grasping, or biting.
2) Physical movement which does not terminate in physical contact with another person including tensed muscles, arm jerks (fisted or open-handed), arm swings, arms poised in hitting position, kicks, or charging, all connoting anger.
3) Any physical contact with inanimate object(s) which causes or has the potential to cause damage to object(s) or person(s) including hitting object(s) with hand or fist, throwing or knocking object(s), throwing object(s) at a person or attempting to strike a person(s) with an object while holding it (whether or not the object makes contact with a person), or holding

an object poised to strike or throw (in the event that the object is not struck with or thrown).
4) Facial movements including any combination of frowns, grimaces, or leers which connote anger and which occur independent of definitions 1-3.

Scoring Rules:
a) Occurrences are separated by time (i.e., a 2-second duration of no Physical Aggression separates occurrences).
b) Occurrences which include components of definitions 1-4, when exhibited concurrently, are scored as only one occurrence.
c) Occurrences concurrent with Verbal Aggression are scored separately.

Subject 2

A. Disruptive Verbal Behavior

Behavior #1: Complaints

Definition:
1) Any speech which includes content denoting negative regard for person(s), place(s), activity(ies), self, or somatic state (see Behavior #2).
2) Any speech, regardless of content, which connotes "sadness" or "depression" as inferred by quivering-of-voice or whining (see Behavior #2).

Scoring Rules: Definitions 1 and 2 occurrences are separated by time (i.e., a 2-second duration or no complaints separates occurrences.

Behavior #2: Verbal Aggression

Definition: Any yelling, screaming, swearing, threatening, name calling, or commanding, regardless of the context in which exhibited.

Scoring Rules: a) Occurrences are separated by time (i.e., a 2-second duration of no Verbal Aggression separates occurrences.
b) Occurrences which also fit the definition of Complaints are scored only as Verbal Aggression.

Behavior #3: Disconnected Speech

Definition:
1) Any speech directed toward another person(s) which is contextually unrelated to current environmental events and which fits neither the Complaint nor the Verbal Aggression definition.
2) Any singing.
3) Any speech not directed toward another person(s), whether intelligible or unintelligible, which fits neither the Complaint not the Verbal Aggression definition.

Scoring Rules: Definitions 1, 2, and 3 occurrences are separated by time (i.e., a 2-second duration of no Disconnected Speech separates occurrences).

Occurrences which also fit the definition of either Complaints or Verbal Aggression are scored only as Complaints or Verbal Aggression, whichever is the correct scoring.

Subject 3

A. Disruptive Verbal Behavior

Behavior #1: Disconnected Speech

Definition: Any speech directed toward another person(s) which is contextually unrelated to current environmental events.

Scoring Rules: Occurrences are separated by time (i.e., a 2-second duration of no Disconnected Speech separates occurrences.

Behavior #2: Verbal Rumination

Definition: Any speech, intelligible or unintelligible, which is not directed at another person(s) and is not in response to a direct question or statement.

Scoring Rules: Occurrences are separated by time (i.e., a 2-second duration of no Verbal Rumination separates occurrences.

Behavior #3: Verbal Aggression

Definition: Any yelling, swearing, screaming, threatening, teasing, name calling, or commanding, regardless of the context in which exhibited.

Scoring Rules: Occurrences are separated by time (i.e., a 2-second duration of no Verbal Aggression separates occurrences.

Subject 4

A. Disruptive Verbal Behavior

Behavior #1: Provoking/Teasing Others and Repetitive Verbalization

Definition:
1) Any utterance of a person's name which is not accompanied by some statement or query, which is not in response to some statement or query, or which is repetitive.
2) Any statement or query which is false.
3) Any statement or query which gives or solicits information already communicated between her and another person.
4) Any request for another person's food/drink.

Scoring Rules: Definition 1) occurrences are separated by each utterance of a peron's name, unless the name (or names) is repeated in the context of a statement or query (e.g., "David...David" is scored as two occurrences, whereas "David, what'ya doing David?" is scored as one occurrence).

Definition 2) occurrences assume knowledge that the statement or query is false (e.g., "I need parts," when in fact parts are present).

Definition 3) occurrences are scored for each statement or query which has already been communicated in a given work day (e.g., "I'm going home this weekend Kim, do you know that?" is scored as an occurrence each time the statement, or a similar statement containing the same information, is made following the initial statement).

Behavior #2: Disruptive Verbal Noises

Definition: Any nonverbal vocalization or mouth sound which is not communicative in function, except for instances of laughing that are in response to some observed event and are socially appropriate.

Scoring Rules: Occurrences are separated by time (i.e., a 2-second or more duration between noises separates occurrences).

Occurrences of laughing are defined as socially appropriate by the context of the event in which they occur. For example, laughing which accompanies teasing of others, or laughing at others' inappropriate behavior, is scored as an occurrence of "noises." However, laughing in response to 'joking around' is not scored as an occurrence of "noises."

B. Disruptive Physical Behavior

Behavior #3: Physical Aggression

Definition: 1) Physical contact with another person including hitting with hand or fist, kicking, pushing, grasping, or biting.

2) Physical movement which does not terminate in physical contact with another person including tensed muscles, arm jerks (fisted or open-handed), arm swings, arms poised in hitting position, kicks, or charging, all connoting anger.
3) Any physical contact with inanimate object(s) which causes or has the potential to cause damage to the object(s) or person(s) including hitting object(s) with hand or fist, throwing or knocking object(s), throwing object(s) at a person or attempting to strike a person with an object while holding it (whether or not the object makes contact with a person), holding an object poised to strike or throw (in the event that the object is not struck with or thrown).

Scoring Rules:
a) Occurrences are separated by time (i.e., a 2-second duration between behaviors separates occurrences).
b) Concurrent occurrences of behaviors included in definitions 1-3 (i.e., two or more behaviors occurring at the same time or overlapping in time without a 2-second duration between them) are scored as only one occurrence.
c) Verbal and Physical Aggression, when occurring concurrently, are both scored as occurrences.

Subject 5

A. Disruptive Verbal Behavior

Behavior #1: Whining and Crying

Definition: Any vocalization, verbal or nonverbal, which is accompanied by whining and/or crying sounds and/or a strained voice.

Scoring Rules: Occurrences are separated by time (i.e., a 2-second duration of no whining/crying separates occurrences).

Behavior #2: Verbal Rumination

Definition:
1) Any speech, intelligible or unintelligible, which is not directed at another person(s) and is not in response to a direct question or statement.
2) Any singing.

Scoring Rules:
a) Occurrences of intelligible and unintelligible singing or speech are separated by time (i.e., a minimum of 2 seconds of no speech or singing is the criterion which separates occurrences).
b) 'Speech not directed at another person' occurs when speech is not accompanied by eye contact or when it does not include the person's name toward whom the speech is directed.

Behavior #3: Repetitive Verbalization

Definition: Any verbalization which is in response to a question or statement and which includes any portion of the question or statement.

Scoring Rules: Occurrences separated by time (i.e., a 2-second duration of no Repetitive Verbalization separates occurrences).

Behavior #4: Interrupting Conversation

Definition: Any verbalization directed at a person who is conversing with another person.

Scoring Rules: Occurrences are scored only if the verbalization does not fit the definition of whining and crying (i.e., the interrupting verbalization must be of an appropriate tone of voice).

B. Disruptive Physical Behavior

Behavior #5: Elopement

Definition: Any time no part of body is in contact with chair or if any part of chair exceeds the designated boundary lines.

Scoring Rules: Occurrences are separated by proximity (i.e., each time any part of body touches the chair or each time chair is returned with the boundary lines, separates occurrences).

Behavior #6: Physical Aggression

Definition:

1) Physical contact with another person including hitting with hand or fist, kicking, pushing, grasping, or biting.
2) Physical movement which does not terminate in physical contact with another person including tensed muscles, arm jerks (fisted or open-handed),arm swings, arms poised in hitting position, kicks, or charging, all connoting anger.
3) Any physical contact with inanimate object(s) which causes or has the potential to cause damage to the object(s) or person(s) including hitting object(s) with hand or fist, throwing or knocking object(s), throwing object(s) at a person or attempting to strike a person with an object while holding it (whether or not the object makes contact with a person), or holding an object poised to strike or throw (in the event that the object is not struck with or thrown).

Scoring Rules:

a) Occurrences are separated by time (i.e., a 2-second duration between behaviors separates occurrences).
b) Concurrent occurrences of behaviors included in definitions 1-3 (i.e., two or more behaviors occurring at the same time, or overlapping in time without a 2-second duration between them) are scored as only one occurrence.
c) Verbal and Physical Aggression, when occurring concurrently, are both scored as occurrences.

Subject 6

A. Disruptive Verbal Behavior

Behavior #1: Verbal Aggression

Definition: Any yelling, swearing, screaming, threatening, name calling, or commanding, regardless of the context in which exhibited (see Behavior #2).

Scoring Rules: Occurrences are separated by time (i.e., a 2-second duration or no Verbal Aggression separates occurrences).

Behavior #2: Disconnected Speech

Definition:
1) Any speech, whether or not directed toward another person(s), which is contextually unrelated to current environmental events.
2) Any speech not directed toward another person(s), either intelligible or unintelligible, which is contextually unrelated to current environmental events.

Scoring Rules: Definition 1 and 2 occurrences are separated by the time (i.e., a 2-second duration of no Disconnected Speech separates occurrences).

B. Disruptive Physical Behavior

Behavior 3: Physical Aggression

Definition:
1) Physical contact with another person including hitting with hand or fist, kicking, pushing, grasping, or biting.
2) Physical movement which does not terminate in physical contact with another person including tensed muscles, arm jerks (fisted or open-handed), arm swings, arms poised in hitting position, kicks, or charging, all connoting anger.

3) Any physical contact with inanimate object(s) which causes or has the potential to cause damage to the object(s) or person(s) including hitting object(s) with hand or fist, throwing or knocking object(s), throwing object(s) at a person or attempting to strike a person with an object while holding it (whether or not the object makes contact with a person), or holding an object poised to strike or throw (in the event that the object is not struck with or thrown).

Scoring Rules:

a) Occurrences are separated by time (i.e., a 2-second duration between behaviors separates occurrences).
b) Concurrent occurrences of behaviors included in definitions 1-3 (i.e., two or more behaviors occurring at the same time, or overlapping them) are scored as only one occurrence.
c) Verbal and Physical Aggression, when occurring concurrently, are both scored as occurrences.

Behavior #4: Elopement

Definition: Any leaving, or attempting to leave, from areas designated as appropriate, to areas designated as inappropriate.

Scoring Rules: Occurrences are separated by proximity (i.e., returning to spot or area designated as appropriate--work station, breakroom, transportation waiting area--whether done independently or with physical guidance, terminates the eloping occurrence).

APPENDIX B

Self-Management Training Program

CLIENT: _____

TRAINER(S): _____

DATE(S): _____

Self-Monitoring Training

/__/ 1. "Today we're going to begin thinking about how we behave when we're working, and we'll play a game that will help you to work better! First, we'll pretend that I'm working in the workshop and we'll see if you can tell me what I'm doing. Here's how we'll do it. Listen now..."

2. "(This time,) I'll be working and you'll have to watch me very carefully because afterward I'll ask you to tell me whether I was

/__/		working or not working."	/__/
/__/	OR	working fast or working slowly."	/__/
/__/	OR	staring or looking at my work."	/__/
/__/	OR	crying or smiling."	/__/
/__/	OR	whining or talking nicely."	/__/
/__/	OR	talking or working quietly."	/__/
/__/	OR	repeating or not repeating."	/__/
/__/	OR	singing or working quietly."	/__/
/__/	OR	out of seat or sitting in my chair."	/__/
/__/	OR	rocking or sitting still."	/__/
/__/	OR	making fist or working fast."	/__/
/__/	OR	hitting or using self-control."	/__/
/__/	OR	touching my face or touching my work parts."	/__/
/__/	OR	yelling or ignoring others."	/__/
/__/	OR	interfering or minding my own business."	/__/

/__/ 3. "Ready? Watch me now..."

Model the appropriate or inappropriate behavior labeled in #2.

/__/ 4. "Was I _____ing or not _____ing (specify behaviors labeled in #2)?"

/__/ 5. a. "Right! I was _____ing (specify behavior modeled). Very good watching! Now let's try another."

> Record a "+" for each correct response. Go back to #2--different behavior--until the client meets a criterion of five consecutive correct responses.

OR

b. "No, that's not what I was doing. I was _____ing (specify behavior modeled). Now, what was I doing? Right! Let's try it again, and this time watch me very carefully."

> Record a "-" for each incorrect response. Go back to #2--same behavior--and provide coaching if needed until the client monitors accurately.

/__/ 6. "Now let's play the game a little differently. This time, you'll be the worker who is working and we'll see if you can tell me what you're doing. Here's how we'll do it. Listen now..."

7. "(This time,) I want you to be working. Afterward, I'll ask you to tell me whether you were

/__/		working or not working."	/__/
/__/	OR	working fast or working slowly."	/__/
/__/	OR	staring or looking at your work."	/__/
/__/	OR	crying or smiling."	/__/
/__/	OR	whining or talking nicely."	/__/
/__/	OR	talking or working quietly."	/__/
/__/	OR	repeating or not repeating."	/__/
/__/	OR	singing or working quietly."	/__/
/__/	OR	out of seat or sitting in your chair."	/__/
/__/	OR	rocking or sitting still."	/__/
/__/	OR	making a fist or working fast."	/__/
/__/	OR	hitting or using self-control."	/__/
/__/	OR	touching your face or touching your work parts."	/__/
/__/	OR	yelling or ignoring others."	/__/
/__/	OR	interfering or minding your own affairs."	/__/

/__/ 8. "Okay. Begin working whenever you're ready...

If necessary, provide the client encouragement to rehearse the appropriate or inappropriate behavior labeled in #7.

/__/ 9. "Were you _____ing or not _____ing (specify behaviors labeled in #7)?"

/__/ 10. a. "That's right! You were _____ing (specify behavior rehearsed). You knew what you were doing! Now let's try a different one this time."

Record a "+" for each correct response. Go back to #7--different behavior--until the client meets a criterion of five consecutive correct responses.

OR

b. "No, that's not what you were doing. You were _____ing (specify behavior rehearsed). Now, what were you doing? Right! Let's see you do the same thing again."

Record a "-" for each incorrect response. Go back to #7--same behavior--and provide coaching if needed until the client accurately self-monitors.

Self-Evaluation Training

/__/ 11. "This is your good Adult Worker card (present good Adult Worker side facing up).* Look at your handsome/pretty face! Do you know why you're smiling? You're smiling because you are being a good Adult Worker. You are

working,
working fast,
looking at your work,
smiling,

*The good/not Adult Worker display card is a laminated 6 x 8 1/2-inch card to be placed at the work station. The good Adult Worker side contains a photograph of the client smiling and has a coin attached to it; the not Adult Worker side depicts him/her frowning.

working quietly,
sitting in your chair,
sitting still,
relaxing,
using self-control,
touching your work parts,
ignoring others, and
minding your own affairs."

Model each behavior with affect as it is labeled. Flip over card.

"Oh-oh. Look what happened. Now you're frowning. You're very sad. Do you know why you're so sad? Because you decided <u>not</u> to act like an Adult Worker. You were

not working,
staring at others,
crying,
whining,
talking to others,
repeating,
singing,
out of your seat,
rocking,
working slowly,
making a fist,
hitting others,
yelling,
touching your face, and
interfering with others."

Model each behavior with affect as it is labeled.

"But now you've decided to be a good Adult Worker so let's flip it back over to the good Adult Worker picture (flip over card.) There! That's much better. Look at that smile! It feels <u>good</u> to be a good Adult Worker!"

Repeat several times using different behaviors, to emphasize the contrast between good Adult Worker behavior and not Adult Worker behavior.

12. "Is

/___/		singing	/___/
/___/	OR	getting out of your chair	/___/
/___/	OR	working fast	/___/
/___/	OR	rocking	/___/
/___/	OR	talking in a whiny voice	/___/
/___/	OR	minding your own affairs	/___/
/___/	OR	hitting others	/___/
/___/	OR	smiling	/___/
/___/	OR	yelling loudly	/___/
/___/	OR	interfering with others	/___/
/___/	OR	using self-control	/___/
/___/	OR	touching your work parts	/___/
/___/	OR	staring at others	/___/
/___/	OR	not working	/___/
/___/	OR	ignoring others	/___/
/___/	OR	crying	/___/

good Adult Worker behavior or not Adult Worker behavior? Show me the right picture."

> Record a "+" for each correct and a "-" for each incorrect response. Repeat several times using different behaviors until the client meets a criterion of five consecutive correct responses.

/___/ 13. "Now we'll play the game a little differently. I'll be the worker who is working again, but this time we'll see if you can tell me what I'm doing and whether it is good Adult Worker behavior or not Adult Worker behavior. Here's how we'll do it. Listen now..."

14. "(This time,) I'll be working and you'll have to watch me very carefully because afterward I'll ask you to tell me whether I was

working or not working.
OR working fast or working slowly.
OR staring or looking at my work.
OR crying or smiling.
OR whining or talking nicely.
OR talking or working quietly.
OR repeating or not repeating.
OR singing or working quietly.
OR out of seat or sitting in my chair.
OR rocking or sitting still.
OR making a fist or working fast.
OR hitting or using self-control.
OR touching my face or touching my work parts.
OR yelling or ignoring others.
OR interfering or minding my own affairs.

Then I'll ask you to tell me whether that is good Adult Worker behavior (point to good Adult Worker side of display card) or not Adult Worker behavior (flip over card)."

15. "Ready? Watch me now..."

Model the appropriate or inappropriate behavior labeled in #14.

16. "Was I _____ing or not _____ing (specify behaviors labeled in #14)?"

17. a. "That's right! I was _____ing (specify behavior modeled). Very good watching!"

Record a "+" for each correct response.

OR

b. "No, that's not what I was doing. I was _____ing (specify behavior modeled). Now, what was I doing? Right! Let's try it again, and this time watch me very carefully."

Record a "-" for each incorrect response. Go back to #14--same behavior--and provide coaching if needed until a correct response is given. If the client has extreme difficulty monitoring accurately, return to #2.

/__/ 18. "Is that good Adult Worker behavior (point to good Adult Worker side of display card) or not Adult Worker behavior? (Flip over card.) Turn to the right picture."

/__/ 19. a. "Right! You knew that _____ing (specify behavior modeled) is good/not Adult Worker behavior. Now let's try another one."

Record a "+" for each correct response. Go back to #14--different behavior--until the client meets a criterion of five consecutive correct responses.

OR

b. "No, that's not correct. _____ing (specify behavior modeled) is good/not Adult Worker behavior. Now, what is _____ing? Right! Let's try it again, and this time think about it very carefully."

Record a "-" for each incorrect response. Go back to #14--same behavior--and provide coaching if needed until the client evaluates accurately.

/__/ 20. "Now let's play the game a little differently. This time you'll be the worker who is working, and we'll see if you can tell me what you were doing and whether it is good Adult Worker behavior or not Adult Worker behavior. Here's how we'll do it. Listen now..."

/__/ 21. "(This time,) I want you to be working. Afterward, I'll ask you to tell me whether you were

/___/		working or not working.	/___/
/___/	OR	working fast or working slowly.	/___/
/___/	OR	staring or looking at your work.	/___/
/___/	OR	crying or smiling.	/___/
/___/	OR	whining or talking nicely.	/___/
/___/	OR	talking or working quietly.	/___/
/___/	OR	repeating or not repeating.	/___/
/___/	OR	singing or working quietly.	/___/
/___/	OR	out of seat or sitting in your chair.	/___/
/___/	OR	rocking or sitting still.	/___/
/___/	OR	making a fist or working fast.	/___/
/___/	OR	hitting or using self-control.	/___/
/___/	OR	touching your face or touching your work parts.	/___/
/___/	OR	yelling or ignoring others.	/___/
/___/	OR	interfering or minding your own affairs.	/___/

Then I'll ask you to tell me whether that is <u>good</u> Adult Worker behavior (point to good Adult Worker side of display card) or <u>not</u> Adult Worker behavior (flip over card.)"

/___/ 22. "Okay. Begin working whenever you're ready..."

> If necessary, provide the client encouragement to rehearse the appropriate or inappropriate behavior labeled in #21.

/___/ 23. "Were you _____ing or not _____ing (specify behaviors labeled in #21)?"

/___/ 24. a. "That's right! You were _____ing (specify behavior rehearsed). You knew what you were doing!"

> Record a "+" for each correct response.

<u>OR</u>

b. "No, that's not what you were doing. You were _____ing (specify behavior rehearsed). Now, what were you doing? Right! Let's see you do the same thing again."

Record a "-" for each incorrect response. Go back to #21--same behavior--and provide coaching if needed until a correct response is given. If the client has extreme difficulty self-monitoring accurately, return to #7.

/__/ 25. "Is that good Adult Worker behavior (point to good Adult Worker side of display card) or not Adult Worker behavior? (Flip over card). Turn to the right picture."

/__/ 26. a. "Right! You knew that _____ing (specify behavior rehearsed) is good/not Adult Worker behavior. Now let's try another one."

Record a "+" for each correct response. Go back to #21--different behavior--until the client meets a criterion of five consecutive correct responses.

OR

b. "No, that's not right. _____ing (specify behavior rehearsed) is good/not Adult Worker behavior. Now, what is _____ing? Right! Let's see you do the same thing again, and this time think about it very carefully."

Record a "-" for each incorrect response. Go back to #21--same behavior--and provide coaching if needed until the client self-evaluates accurately.

Self-Consequation Training

/__/ 27. "Here are some new things for you to put at your work station! This is called a money bank and it's filled with coins for a good Adult Worker to earn (show client). Every time before you begin working, take one of these coins... and attach it with this money clip to your good Adult Worker picture (demonstrate). Whenever you earn the coin by being a good Adult Worker, you may take it off your picture...and put it here, in your money board (demonstrate). Let me see you try it!"

If necessary, repeat the instructions, redemonstrate the behavior sequence, and/or prompt the client with such questions as, "Now, what is this called?", "What must you do before you begin working?", and "Where do you put the coin after you've earned it?"

/__/ 28. "This is your timer. Do you see this red mark? Let's turn the timer to that mark (demonstrate). See if you can do it (prompt if necessary). Good! Whenever you decide you want to be a good Adult Worker and earn some money, set the timer at this red mark, and begin working (demonstrate). If you are a good Adult Worker by

working,
working fast,
looking at your work,
smiling,
working quietly,
sitting in your chair,
sitting still,
relaxing,
using self-control,
touching your work parts,
ignoring others, and
minding your own affairs

until the bell rings (ring the timer), you may take the coin from your money clip...and put it in your money board (demonstrate). Let me see you do it. (Provide as many trials as necessary). Good!"

But, anytime you decide <u>not</u> to act like an Adult Worker by

not working,
working slowly,
staring at others,
crying,
whining,
talking loudly,
repeating,
singing,
getting out of your chair,
rocking,
making a fist,
hitting others,
yelling, or
interfering with others,

you must stop your timer...and turn over your card to the not Adult Worker picture (demonstrate). You see, when you decide not to be an Adult Worker, you can't earn any money. It feels just awful not to be an Adult Worker... Now you try it (provide as many trials as many trials as necessary). Good!"

"Then, whenever you decide you do want to be a good Adult Worker again, flip over your card to the good Adult Worker picture...and turn your timer to the red mark, like this (demonstrate). There! That feels so much better! It feels great to be a good Adult Worker! Now you can be a good Adult Worker and earn lots of money! Now let me see you try the whole thing!"

Prompt the client through entire consequation sequence for both appropriate and inappropriate behaviors.

/__/ 29. "Now let's play the game again, and this time I'll be the worker who is working. Sometimes I'll stop and ask you some questions. Here's how we'll do it. Listen now..."

/__/ 30. "(This time,) I'll be working and you'll have to watch me very carefully. Do you know why? Because, whenever the timer rings or whenever I behave inappropriately, I'll ask you what I just did, whether it is good Adult Worker or not Adult Worker behavior, and what I earn.

/__/ 31. "Ready? Watch me now..."

Turn the display card to the good Adult Worker picture, attach a coin, set the timer, and begin working. Model (a) a specific appropriate behavior until the timer rings, or (b) an inappropriate behavior and stop working immediately.

/__/ 32. "What did I just do?"

/__/ 33. a. "That's right! I was _____ing (specify behavior modeled)."

/__/

/__/

Record a "+" for each correct response.

OR

b. "No, that's not what I did. I was _____ing (specify behavior modeled). Now, what was I doing? Right! Let's try it again, and this time watch me very carefully."

Record a "-" for each incorrect response. Go back to #30--same behavior--and provide coaching if needed until a correct response is given. If the client has extreme difficulty monitoring accurately, return to #2.

34. "Is that good Adult Worker behavior (point to good Adult Worker side of display card) or not Adult Worker behavior? (Flip over card). Turn to the right picture."

35. a. "Right! You know that _____ing (specify behavior modeled) is good/not Adult Worker behavior."

Record a "+" for each correct response.

OR

b. "No, that's not correct. _____ing (specify behavior modeled) is good/not Adult Worker behavior. Now, what is _____ing? Right! Let's try it again, and this time think about it very carefully."

Record a "-" for each incorrect response. Go back to #30--same behavior--and provide coaching if needed until a correct response is given. If the client has extreme difficulty evaluating accurately, return to #14.

36. a. If appropriate behavior was modeled, state:

"Wow, I did it! That's fantastic! I'm so proud of myself!" and ask the client:

/__/__/__/__/__/__/--"What do I earn?"
/__/__/__/__/__/__/--"What should I do with the coin that I earned?"
/__/__/__/__/__/__/--"What should I do next time?"
/__/__/__/__/__/__/--"What do I do with my timer now?"

OR

b. If inappropriate behavior was modeled, state:

"I feel just terrible. I was not an Adult Worker. Too bad I didn't make it," and ask the client:

/__/__/__/__/__/__/--"What should I do with my timer?"
/__/__/__/__/__/__/--"Do I earn anything?"
/__/__/__/__/__/__/--"What should I have done?"
/__/__/__/__/__/__/--"What should I do next time?"
/__/__/__/__/__/__/--"Okay, since I've decided to act like a good Adult Worker this time and earn some money, what do I do with my not Adult Worker picture?"
/__/__/__/__/__/__/--"What should I do with my timer?"

/__/ 37. a. "Good! That's right!"

Record a "+" for each correct response. Go back to #30--different behavior--until the client meets a criterion of five consecutive correct entire behavior sequences.

OR

b. "No, that's not right. I must (specify correct self-consequation behavior). Now, tell me again. What should I do? Right! Let's try it again, and this time think about it very carefully."

Record a "-" for each incorrect response. Go back to #30--same behavior--and provide coaching if needed until the client consequates accurately.

/__/ 38. "Now let's play the game a little differently. This time, you'll be the worker who is working. Sometimes I'll stop you and ask you some questions. Here's how we'll do it. Listen now..."

/__/ 39. "(This time,) you'll be working and whenever the timer rings or whenever you behave inappropriately, I'll ask you what you did, whether it is good Adult Worker behavior or not Adult Worker behavior, and what you earn.

/__/ 40. "Okay. Begin working whenever you're ready..."

> If necessary, prompt the client to turn the display card to the good Adult Worker picture, attach a coin, set the timer, and begin working. Encourage him/her to rehearse (a) a specific appropriate behavior until the timer rings, or (b) an inappropriate behavior and stop working immediately.

/__/ 41. "What did you just do?"

/__/ 42. a. "That's right! You were _____ing (specify behavior rehearsed).

> Record a "+" for each correct response.

OR

b. "No, that's not what you were doing. You were _____ing (specify behavior rehearsed). Now, what were you doing? Right! Let's see you do the same thing again."

> Record a "-" for each incorrect response. Go back to #39--same behavior--and provide coaching if needed until a correct response is given. If the client has extreme difficulty self-monitoring accurately, return to #17.

/__/ 43. "Is that <u>good</u> Adult Worker behavior (point to good Adult Worker side of display card) or <u>not</u> Adult Worker behavior (lip over card Turn to the right picture."

/__/ 44. a. "Right! You knew that _____ing (specify behavior rehearsed) is good/not Adult Worker behavior."

> Record a "+" for each correct response.

OR

/__/ b. "No, that's not right. _____ing (specify behavior
/__/ rehearsed) is good/not Adult Worker behavior. Now,
/__/ what is _____ing? Right! Let's see you do the
/__/ same thing again, and this time think about it very
/__/ carefully."
/__/
/__/ Record a "-" for each incorrect response. Go back to
/__/ #39--same behavior--and provide coaching if needed
/__/ until a correct response is given. If the client has
/__/ extreme difficulty self-evaluating accurately, return
/__/ to #21.

45. a. In appropriate behavior was rehearsed, state:

"Wow, you did it! That's fantastic! I'll bet you're proud of yourself!" and ask the client:

/__/__/__/__/__/__/--"What do you earn?"
/__/__/__/__/__/__/--"What should you do with the coin that you earned?"
/__/__/__/__/__/__/--"What are you going to do next time?"
/__/__/__/__/__/__/--"What do you do with your timer now?"

OR

b. If inappropriate behavior was rehearsed, state:

"I'll bet you feel just terrible! You were not an Adult Worker. Too bad you didn't make it," and ask the client:

/__/__/__/__/__/__/--"What should you do with your timer?"
/__/__/__/__/__/__/--"Do you earn anything?"
/__/__/__/__/__/__/--"What should you have done?"
/__/__/__/__/__/__/--"What are you going to do next time?"
/__/__/__/__/__/__/--"Okay, since you've decided to act like a good Adult Worker this time and earn some money, what do you do with your not Adult Worker picture?"
/__/__/__/__/__/__/--"What should you do with your timer?"

/__/ 46. a. "Good! That's right!"

> Record a "+" for each correct response. Go back to #39--different behavior--until the client meets a criterion of five consecutive correct entire behavior sequences.

OR

b. "No, that's not right. You must (specify correct self-consequation behavior). Now, tell me again. What should you do? Let's try it again, and this time think about it very carefully."

> Record a "-" for each incorrect response. Go back to #39--same behavior--and provide coaching if needed until the client self-consequates accurately.

Self-Instructional Training

/__/ 47. "You know that sometimes you're in a bad mood and you cry if someone teases you or if things don't go your way. You might even try to leave the workshop! Then, at other times, you just sit rocking in your chair and stare at others. Sometimes you and Willie yell 'I'm going to kick you, you, you, you in the AAAASS!'"

/__/ 48. "Is that good Adult Worker behavior or not Adult Worker behavior? Right! That's not Adult Worker behavior. Can you earn money when you're not an Adult Worker? No! How does it feel to be not an Adult Worker? That's right. It feels just terrible!"

"Well, lots of times this happens because of what you're saying to yourself while you're working in the workshop. You might be saying to yourself,

'I want Debbie to talk to me too!'
'I wish he'd stop teasing me!'
'I'm tired.'
'I'm bored.'
'Why is he staring at me?'
'Quit yelling at me!' or
'I don't feel well today!"

/__/ 49. "Is that right? Well, today I'm going to teach you some other things to say to yourself so you can be a good Adult Worker in the workshop."

"First, I'll show you what I'm saying to myself while I'm working. Later, I'll ask you to be the worker and talk to yourself."

"I just know you'll have lots of fun with this! How does it sound to you? Good! Then let's get started."

/__/ 50. "Okay, listen very carefully to what I say to myself while I'm working. Are you listening?..."

"Let's see. What is it I have to do to be a good Adult Worker? I have to

work,
work fast,
look at my work,
smile,
work quietly,
sit in my chair,
sit still,
relax,
use self-control,
touch my work parts,
ignore others, and
mind my own affairs."

Model and point to each Adult Worker behavior as it is labeled.

/__/ 51. "It sure is noisy in here today, but that's okay. I'm going to be a good Adult Worker! I'm going to

work,
work fast,
look at my work,
smile,
work quietly,
sit in my chair,
sit still,
relax,
use self-control,
touch my work parts,
ignore others, and
mind my own affairs."

/__/ 52. Model appropriate work behavior for several seconds.

"Good! I'm doing a <u>great</u> job today! I'm

working...
working fast...
looking at my work...
smiling...
working quietly...
sitting in my chair...
sitting still...
relaxing...
using self-control...
touching my work parts...
ignoring others...and
minding my own affairs."

Model/point to each appropriate behavior as it is labeled.

"It feels so <u>good</u> to be a good Adult Worker! I feel <u>happy</u> inside!"

53. "Okay, now listen very carefully to what I say to myself while I'm working and

/___/ David is staring at me."
/___/ OR David throws a work part at me."
/___/ OR Karen says, 'Do ya like me, Robin?'"
/___/ OR David screams at me to 'Quit staring!'"
/___/ OR Bea is yelling at me."
/___/ OR Debbie is talking to Ralph, not to me."
/___/ OR Willie starts yelling at me."
/___/ OR David screams at me to 'Get to work!"

54. Provide audio/visual simulation of those cues most provocative to this particular client.

"Oh, no! I see that

/___/ David is staring at me again!
/___/ OR David threw something at me!
/___/ OR Karen's asking me questions again!
/___/ OR David is screaming at me!
/___/ OR Bea is yelling at me!
/___/ OR Debbie's not paying attention to me!
/___/ OR Willie is yelling again!
/___/ OR David is screaming at me again!

That makes me so angry! Why doesn't he/she just shut up! ...I feel like screaming!...I'll show him/her!" (Pick up a work part to throw at him/her.)

55. Continue the simulated provocation.

"Wait! I was getting angry. He/she does make me upset, but I'm an Adult (point to Adult Worker card). I'm going to stay calm and use my self-control. I'm not going to

/___/ tell David to quit staring."
/___/ OR tell David to cut it out."
/___/ OR answer Karen's questions."
/___/ OR whine and complain to staff."
/___/ OR tell Bea to be quiet."
/___/ OR cry about it."
/___/ OR yell back at Willie."
/___/ OR start whining and crying."

56. Continue the simulated provocation.

"I'm going to be a good Adult Worker. Take a deep breath (demonstrate)...Ah, there...Self-control...Just relax... Relax...That's good. It feels so good to be relaxed...I'm going to

/__/ look at my work instead of at David."
/__/ OR ignore David and keep on working."
/__/ OR ignore Karen's questions."
/__/ OR ignore David's yelling."
/__/ OR ignore Bea and keep working fast."
/__/ OR wait and talk to Debbie at break."
/__/ OR ignore Willie's yelling."
/__/ OR use self-control and ignore David."

Model/point to each alternative coping behavior as it is labeled.

57. Discontinue the provocation.

"There. I did it! I used self-control! Wow, do I feel great! I'm so proud of myself! I didn't get angry or

/__/ yell at Dave!
/__/ OR throw something back at David!
/__/ OR answer Karen!
/__/ OR whine and cry!
/__/ OR yell at Beatrice!
/__/ OR whine and complain to Debbie!
/__/ OR yell back at Willie!
/__/ OR yell back at David!

I was a good Adult Worker! I feel proud and happy inside!"

/__/ 58. "That was very good watching and listening! Okay, this time I want you to be the worker and I'll talk for you. Ready? Here we go!..."

"Let's see. What is it you have to do to be a good Adult Worker? You have to

work,
work fast,
look at your work,
smile,
work quietly,
sit in your chair,
sit still,
relax,
use self-control,
touch your work parts,
ignore others, and
mind your own affairs."

Encourage the client to model and point to each Adult Worker behavior as it is labeled. Provide reinforcement, corrective feedback, and/or prompting when necessary.

/__/ 59. "It sure is noisy in here today, but that's okay. You're going to be a good Adult Worker! You're going to

work,
work fast,
look at your work,
smile,
work quietly,
sit in your chair,
sit still,
relax,
use self-control,
touch your work parts,
ignore others, and
mind your own affairs."

/__/ 60.

Encourage the client to rehearse appropriate work behavior for several seconds.

"Good! You're doing a <u>great</u> job today! You're

working...
working fast...
looking at your work...
smiling...
working quietly...
sitting in your chair...
sitting still...
relaxing...
using self-control...
touching your work parts...
ignoring others...and
minding your own affairs."

Encourage the client to model/point to each appropriate behavior as it is labeled.

"It feels so <u>good</u> to be a good Adult Worker! I'll bet you feel <u>happy</u> inside!

61. "Okay, now listen <u>very carefully</u> to what you'll say to yourself while you're working and

/___/ David is staring at you."
/___/ <u>OR</u> David throws a work part at you."
/___/ <u>OR</u> Karen says, 'Do ya like me, Robin?'"
/___/ <u>OR</u> David screams at you to '<u>Quit staring</u>!'"
/___/ <u>OR</u> Bea is yelling at you."
/___/ <u>OR</u> Debbie is talking to Ralph, not to you."
/___/ <u>OR</u> Willie starts yelling at you."
/___/ <u>OR</u> David screams at you to 'Get to work!'"

62. | Provide audio/visual simulation of those cues most provocative to this particular client. |
|---|

"Oh, <u>no</u>! You see that

/___/ David is staring at you again!
/___/ <u>OR</u> David threw something at you!
/___/ <u>OR</u> Karen's asking you questions again!
/___/ <u>OR</u> David is screaming at you!
/___/ <u>OR</u> Bea is yelling at you!
/___/ <u>OR</u> Debbie's not paying attention to you!
/___/ <u>OR</u> Willie is yelling again!
/___/ <u>OR</u> David is screaming at you again!

That makes you so angry! Why doesn't he/she just shut up! ...You feel like screaming!...You'll show him/her!" (Encourage the client to pick up a work part to throw at him/her.)

63. Continue the simulated provocation.

"Wait! You were getting angry. He/she does make you upset, but you're an Adult (encourage client to point to the Adult Worker card). You're going to stay calm and use your self-control. You're not going to

/___/ tell David to quit staring."
/___/ OR tell David to cut it out."
/___/ OR answer Karen's questions."
/___/ OR whine and complain to staff."
/___/ OR tell Bea to be quiet."
/___/ OR cry about it."
/___/ OR yell back at Willie."
/___/ OR start whining and crying."

64. Continue the simulated provocation.

"You're going to be a good Adult Worker. Take a deep breath (encourage the client to demonstrate)...Ah, there... Self-control...Just relax...Relax...That's good. It feels so good to be relaxed...You're going to

/___/ look at your work instead of at David."
/___/ OR ignore Dave and keep on working."
/___/ OR ignore Karen's questions."
/___/ OR ignore David's yelling."
/___/ OR ignore Bea and keep working fast."
/___/ OR wait and talk to Debbie at break."
/___/ OR ignore Willie's yelling."
/___/ OR use self-control and ignore David."

Encourage the client to model/point to each alternative coping behavior as it is labeled.

65. Discontinue the provocation.

"There. You did it! You used self-control! Wow, do you feel great! You're so proud of yourself! You didn't get angry or

/___/ yell at Dave!
/___/ OR throw something back at David!
/___/ OR answer Karen!
/___/ OR whine and cry!
/___/ OR yell at Beatrice!
/___/ OR whine and complain to Debbie!
/___/ OR yell back at Willie!
/___/ OR yell back at David!

You were a good Adult Worker! You feel proud and happy inside!"

/___/ 66. "Okay! You did a great job! Now, this time, I want you to do everything. You'll talk to yourself aloud. I want to be able to hear everything you're saying to yourself, so remember to talk nice and loudly. Ready?...

Client should state:

"Let's see. What is it I have to do to be a good Adult Worker? I have to

work,
work fast,
look at my work,
smile,
work quietly,
sit in my chair,
sit still,
relax,
use self-control,
touch my work parts,
ignore others, and
mind my own affairs."

Encourage the client to model and point to each Adult Worker behavior as he/she labels it. Provide reinforcement, corrective feedback, and/or prompting when necessary.

/ / 67. Client should state:

"It sure is noisy in here today, but that's okay. I'm going to be a good Adult Worker! I'm going to

work,
work fast,
look at my work,
smile,
work quietly,
sit in my chair,
sit still,
relax,
use self-control,
touch my work parts,
ignore others, and
mind my own affairs."

/ / 68. Encourage the client to rehearse appropriate work behavior for several seconds.

Client should state:

"Good! I'm doing a great job today! I'm

working...
working fast...
looking at my work...
smiling...
working quietly...
sitting in my chair...
sitting still...
relaxing...
using self-control...
touching my work parts...
ignoring others...and
minding my own affairs."

Encourage the client to model/point to each appropriate behavior as he/she labels it.

"It feels so good to be a good Adult Worker! I feel happy inside!"

69. "Okay, now I want you to show me what you're going to say to yourself while you're working and

/___/ David is staring at you."
/___/ OR David throws a work part at you."
/___/ OR Karen says, 'Do ya like me, Robin?'"
/___/ OR David screams at you to 'Quit staring!'"
/___/ OR Bea is yelling at you."
/___/ OR Debbie is talking to Ralph, not to you."
/___/ OR Willie starts yelling at you."
/___/ OR David screams at you to "Get to work!'"

70. Provide audio/visual simulation of those cues most provocative to this particular client.

Client should state:

"Oh, no! I see that

/___/ David is staring at me again!
/___/ OR David threw something at me!
/___/ OR Karen's asking me questions again!
/___/ OR David is screaming at me!
/___/ OR Bea is yelling at me!
/___/ OR Debbie's not paying attention to me!
/___/ OR Willie is yelling again!
/___/ OR David is screaming at me again!

That makes me so angry! Why doesn't he/she just shut up! ...I feel like screaming!...I'll show him/her!"
(Encourage the client to pick up a work part to throw at him/her).

71. Continue the simulated provocation.

Client should state:

"Wait! I was getting angry. He/she does not make me upset, but I'm an Adult (encourage client to point to the Adult Worker card). I'm going to stay calm and use my self-control. I'm not going to

/___/ tell David to quit staring."
/___/ OR tell David to cut it out."
/___/ OR answer Karen's questions."
/___/ OR whine and complain to staff."
/___/ OR tell Bea to be quiet."
/___/ OR cry about it."
/___/ OR yell back at Willie."
/___/ OR start whining and crying."

72. Continue the simulated provocation.

"I'm going to be a good Adult Worker. Take a deep breath (encourage the client to demonstrate)...Ah, there...Self-control...Just relax...Relax...That's good. It feels so good to be relaxed...I'm going to

/___/ look at my work instead of at David."
/___/ OR ignore Dave and keep on working."
/___/ OR ignore Karen's questions."
/___/ OR ignore David's yelling."
/___/ OR ignore Bea and keep working fast."
/___/ OR wait and talk to Debbie at break."
/___/ OR ignore Willie's yelling."
/___/ OR use self-control and ignore David."

Encourage the client to model/point to each alternative coping behavior as it is labeled.

73. Discontinue the provocation.

Client should state:

"There. I did it! I used self-control! Wow, do I feel great! I'm so proud of myself! I didn't get angry or

/___/ yell at Dave!
/___/ OR throw something back at David!
/___/ OR answer Karen!
/___/ OR whine and cry!
/___/ OR yell at Beatrice!
/___/ OR whine and complain to Debbie!
/___/ OR yell back at Willie!
/___/ OR yell back at David!

I was a good Adult Worker! I feel proud and happy inside!"

/__/ 74. Repeat #66-73 several times. Each time, gradually increase the duration and intensity of the simulated provocation, and encourage the client to speak more and more softly. The utlimate goal, of course, is for the client to verbalize silently to him/herself under the actual provoking conditions.

APPENDIX C

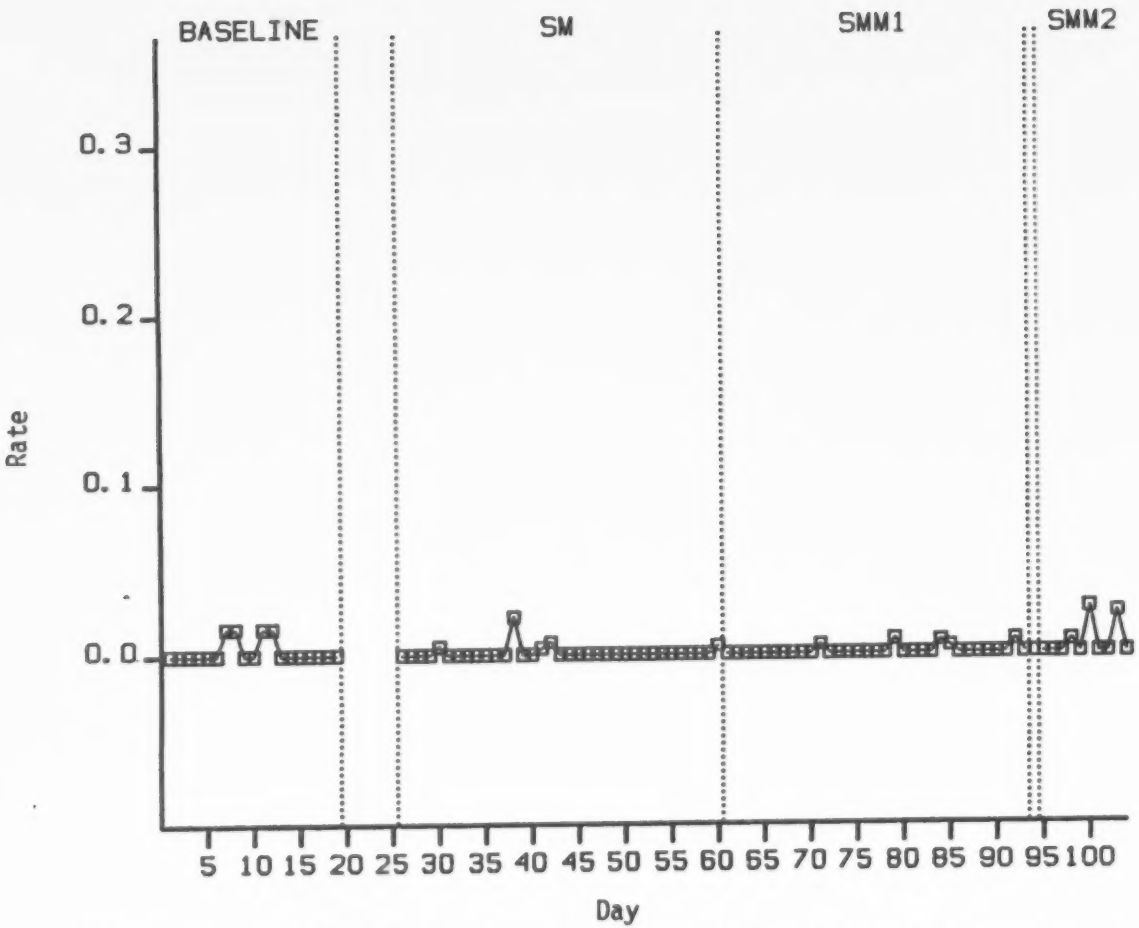

Figure 11. Daily rate of inappropriate verbal and physical behaviors for Subject 1 during baseline, intervention, probe, and maintenance phases.

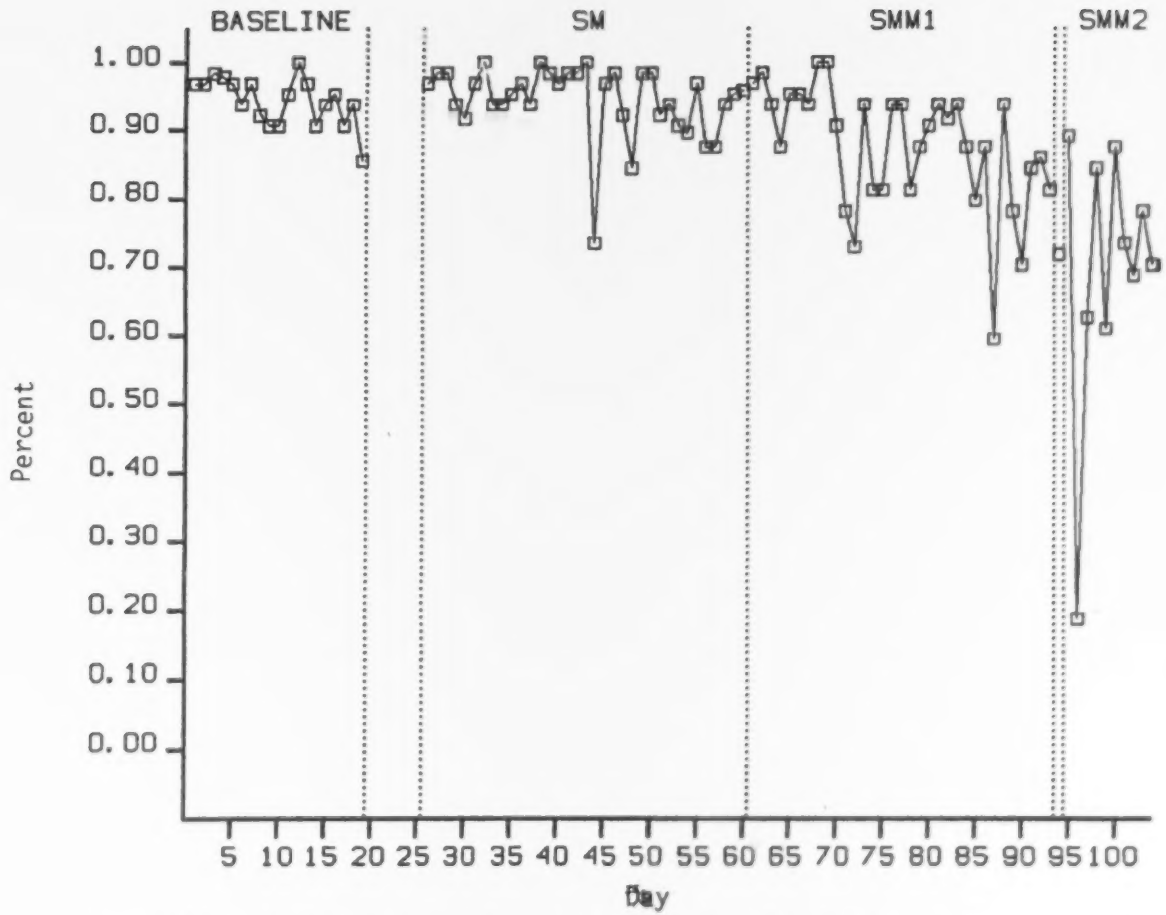

Figure 12. Daily percent of on-task behavior for Subject 1 during baseline, intervention, probe, and maintenance phases.

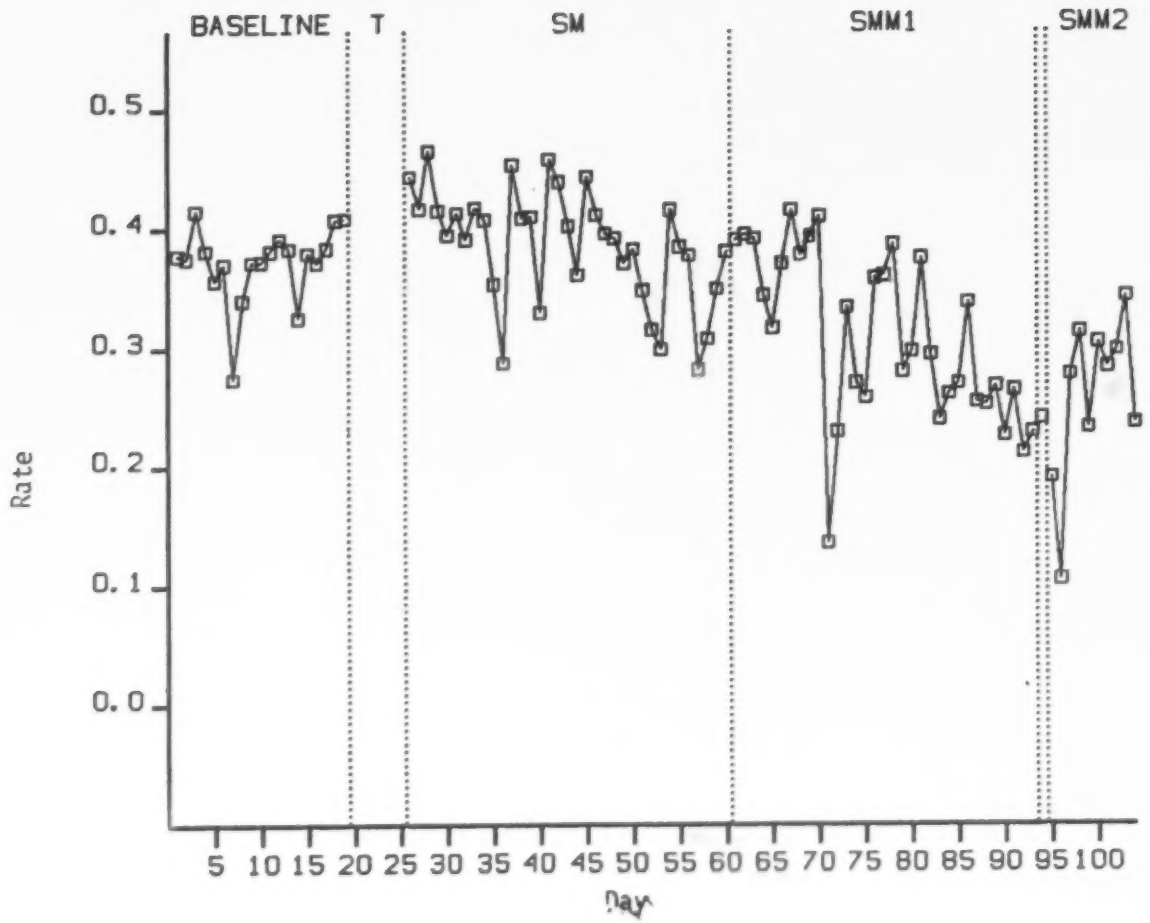

Figure 13. Daily rate of work productivity for Subject 1 during baseline, intervention, probe, and maintenance phases.

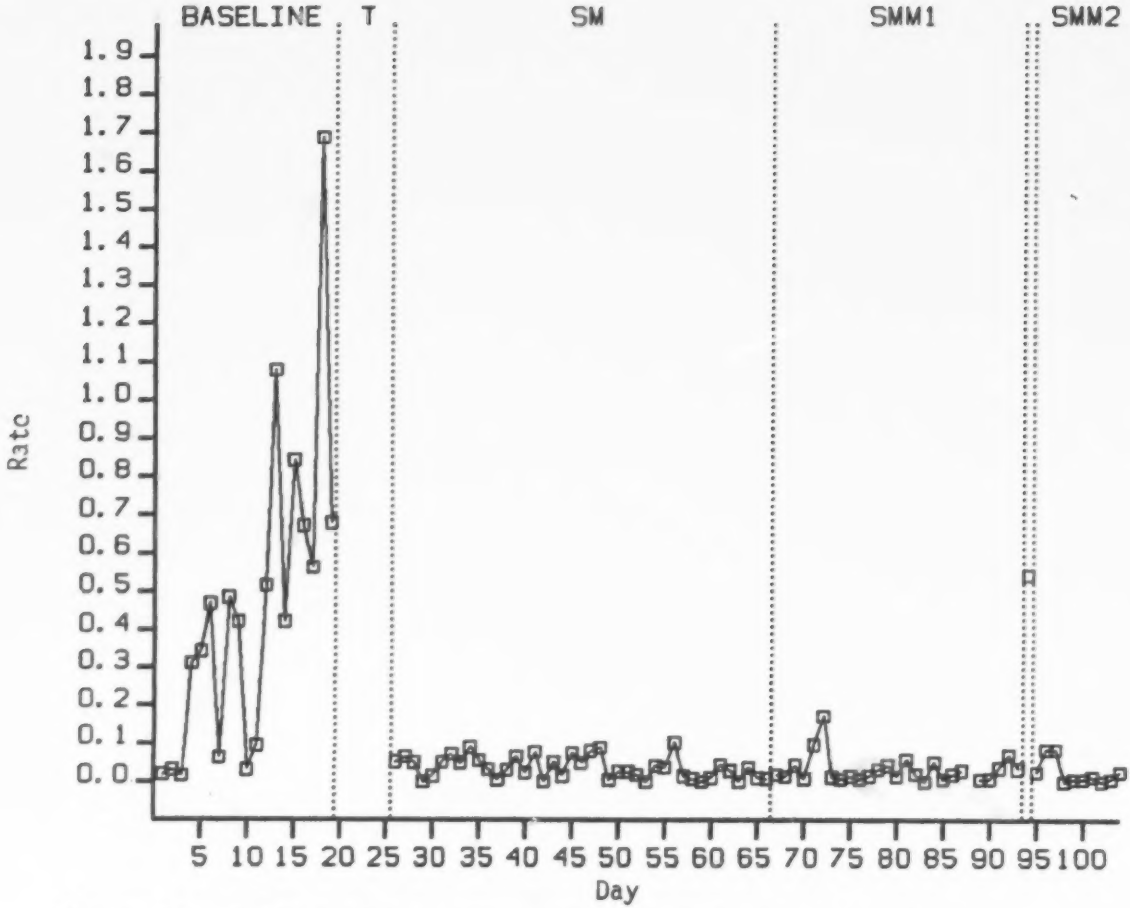

Figure 14. Daily rate of inappropriate verbal and physical behaviors for Subject 2 during baseline, intervention, probe, and maintenance phases.

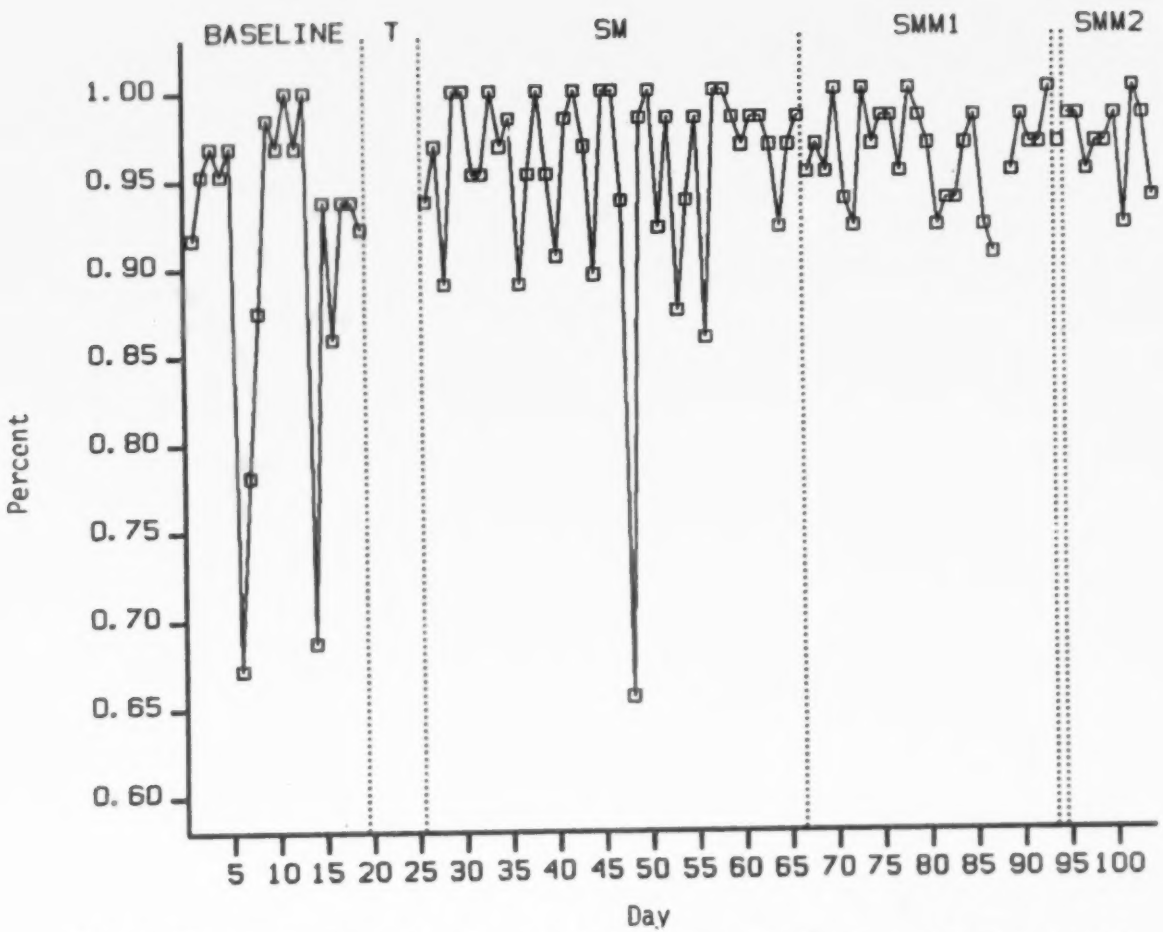

Figure 15. Daily percent of on-task behavior for Subject 2 during baseline, intervention, probe, and maintenance phases.

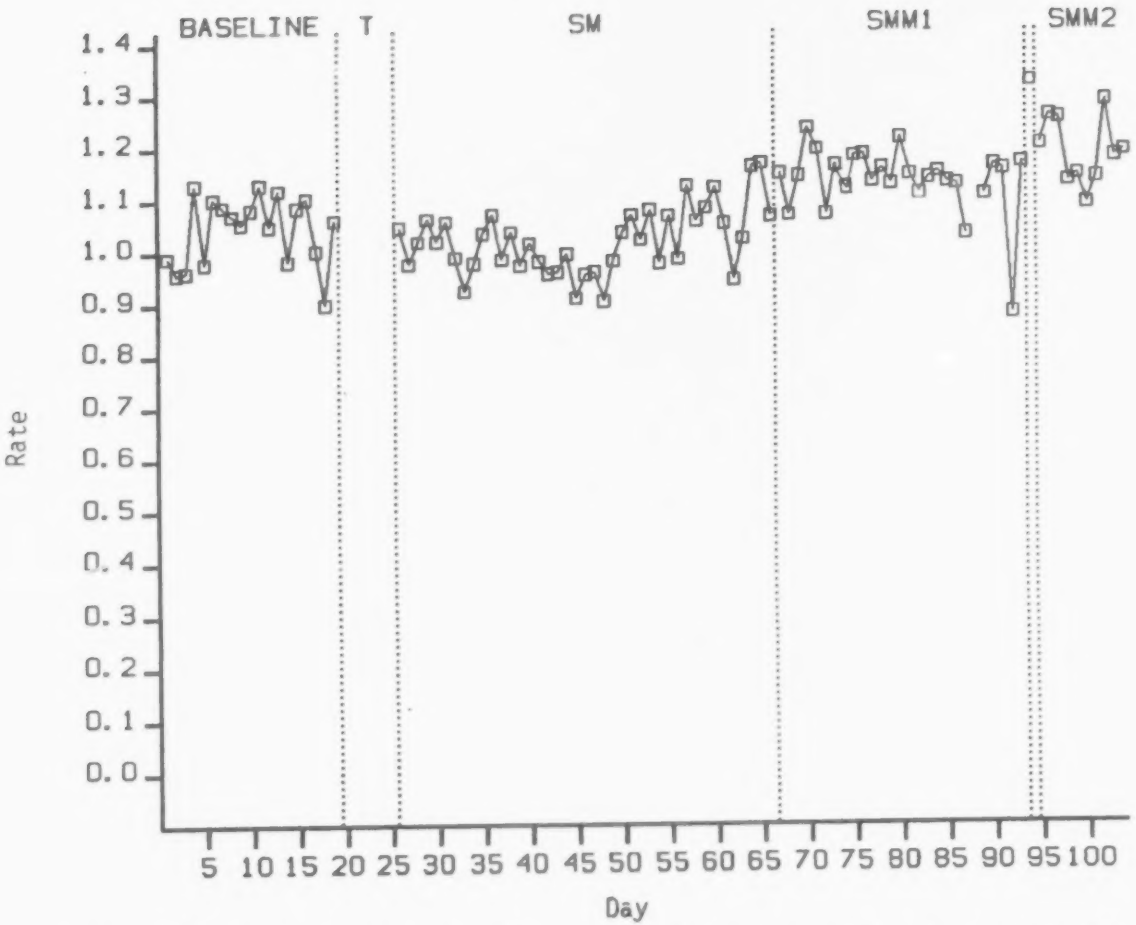

Figure 16. Daily rate of work productivity for Subject 2 during baseline, intervention, probe, and maintenance phases.

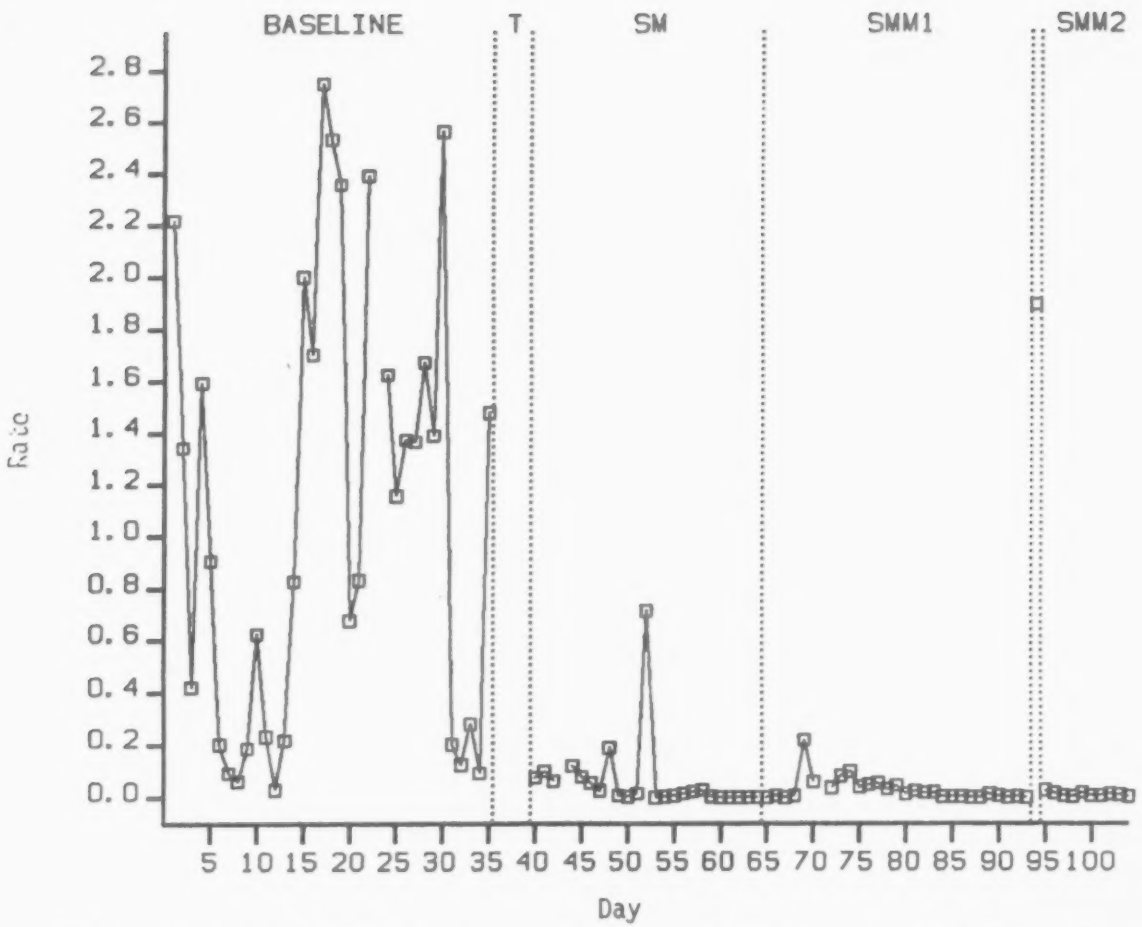

Figure 17. Daily rate of inappropriate verbal and physical behaviors for Subject 3 during baseline, intervention, probe, and maintenance phases.

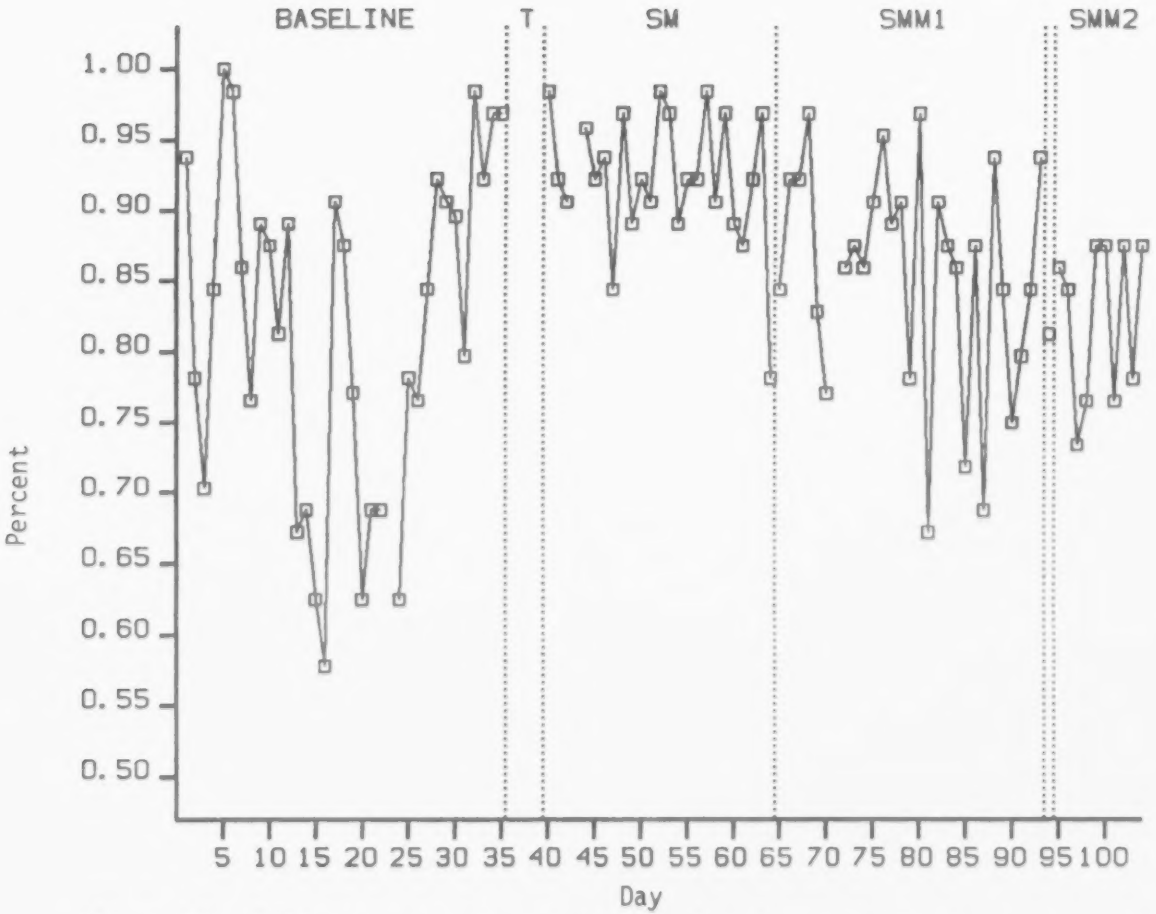

Figure 18. Daily percent of on-task behavior for Subject 3 during baseline, intervention, probe, and maintenance phases.

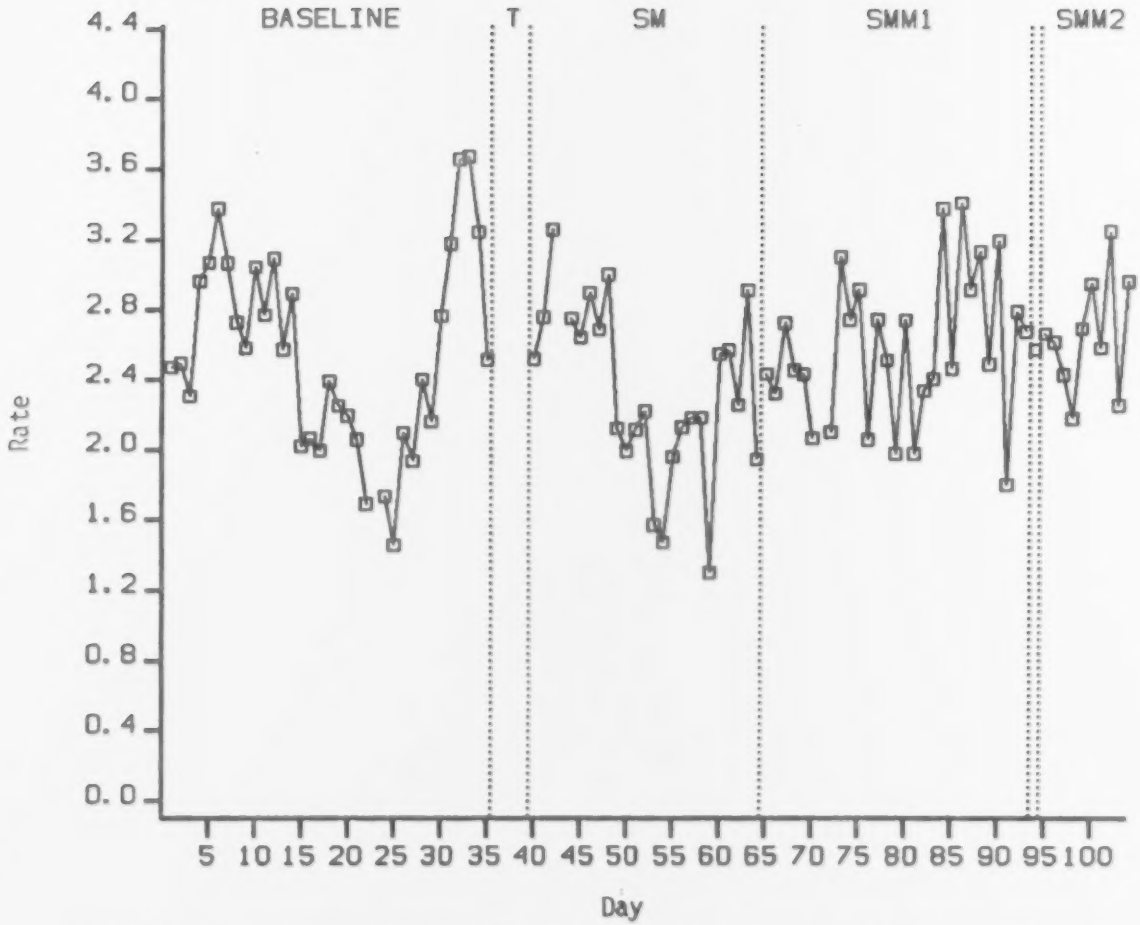

Figure 19. Daily rate of work productivity for Subject 3 during baseline, intervention, probe, and maintenance phases.

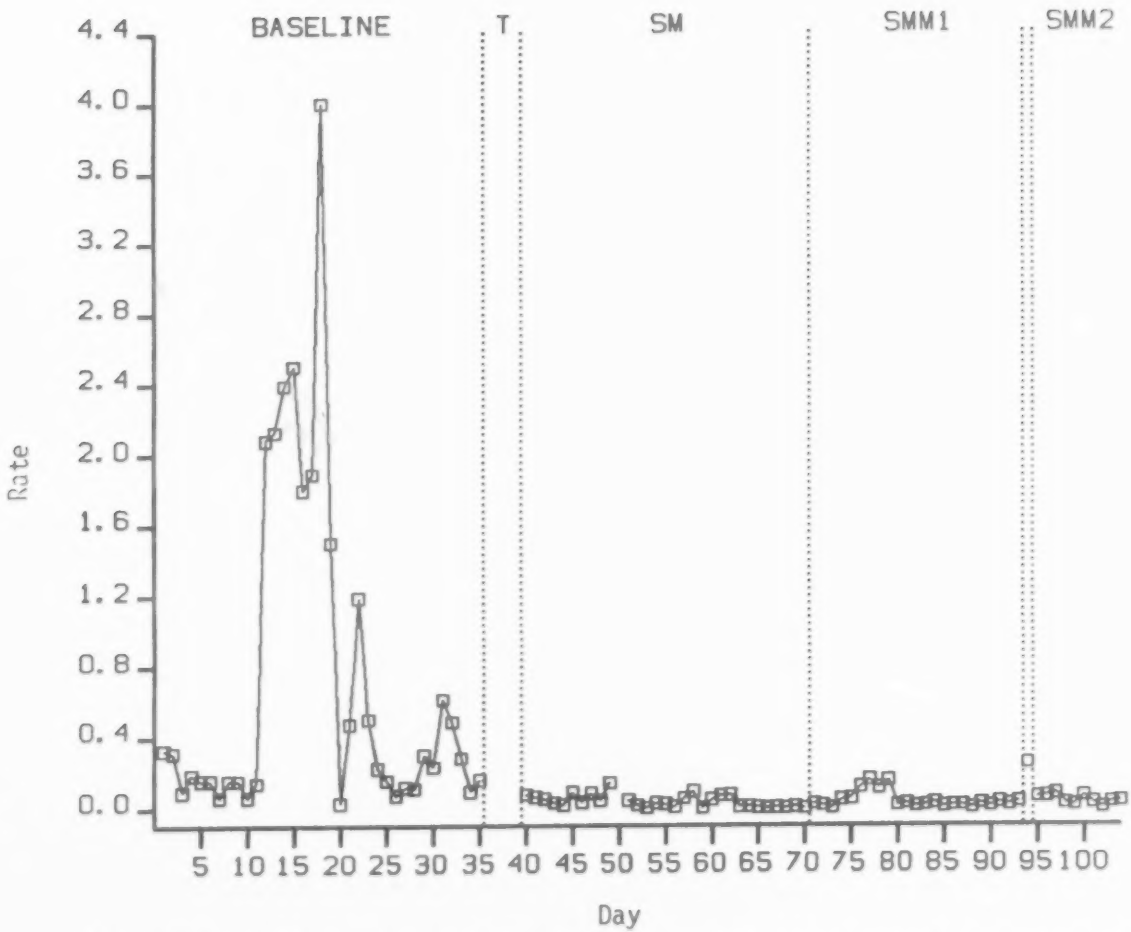

Figure 20. Daily rate of inappropriate verbal and physical behaviors for Subject 4 during baseline, intervention, probe, and maintenance phases.

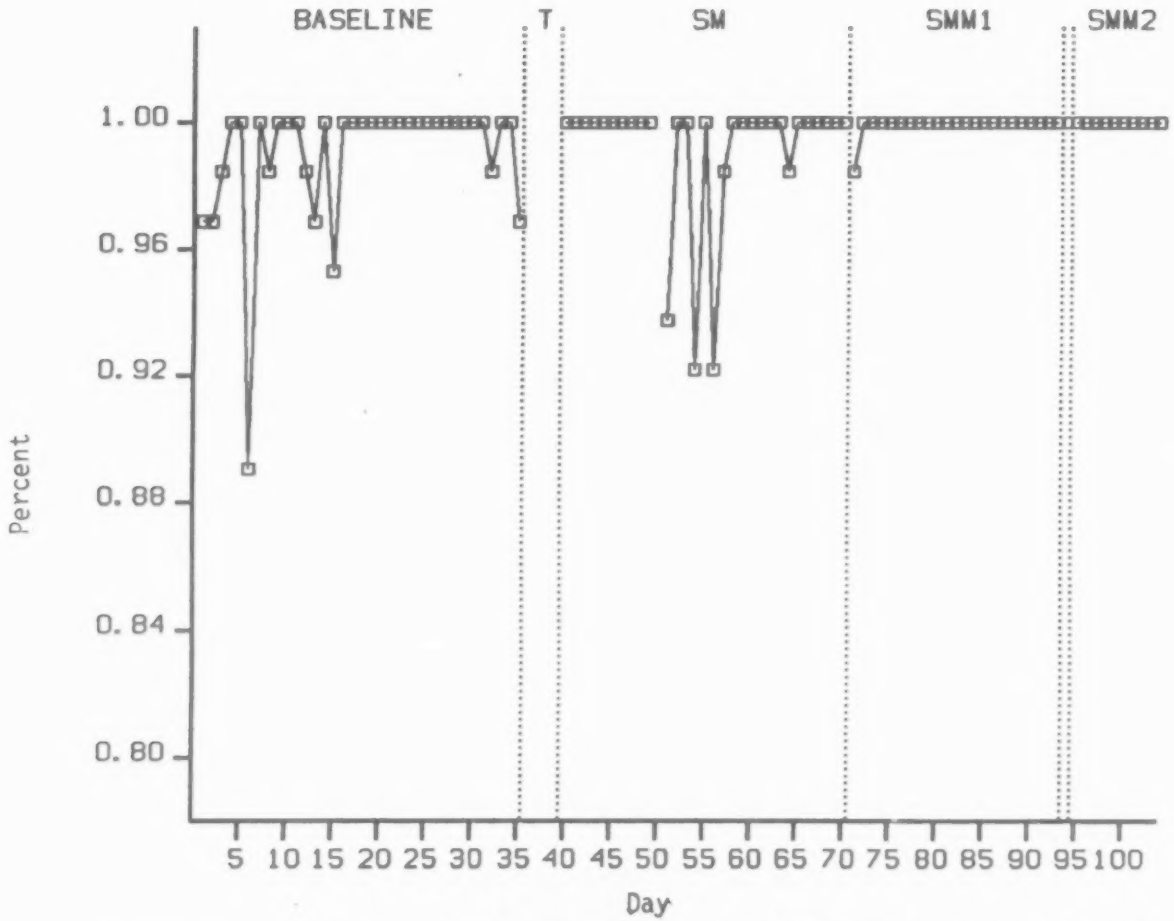

Figure 21. Daily percent of on-task behavior for Subject 4 during baseline, intervention, probe, and maintenance phases.

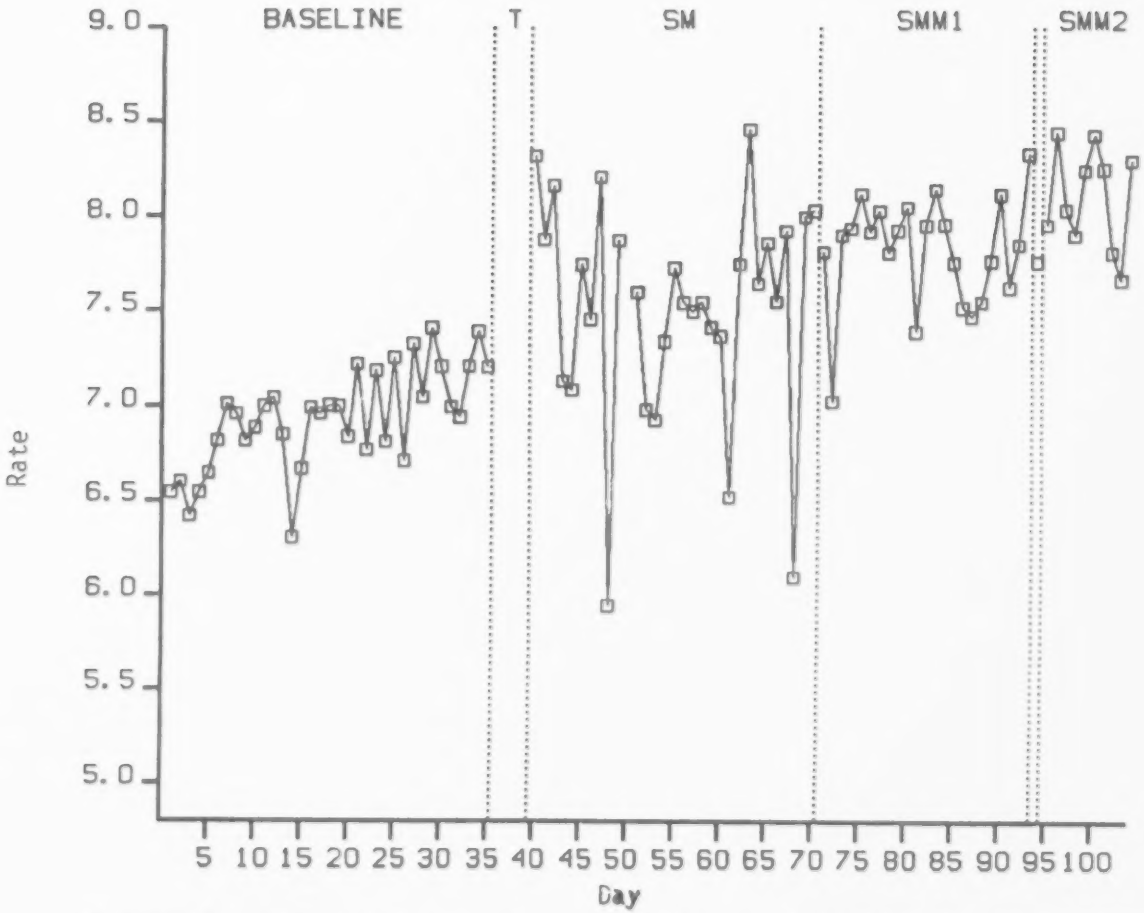

Figure 22. Daily rate of work productivity for Subject 4 during baseline, intervention, probe, and maintenance phases.

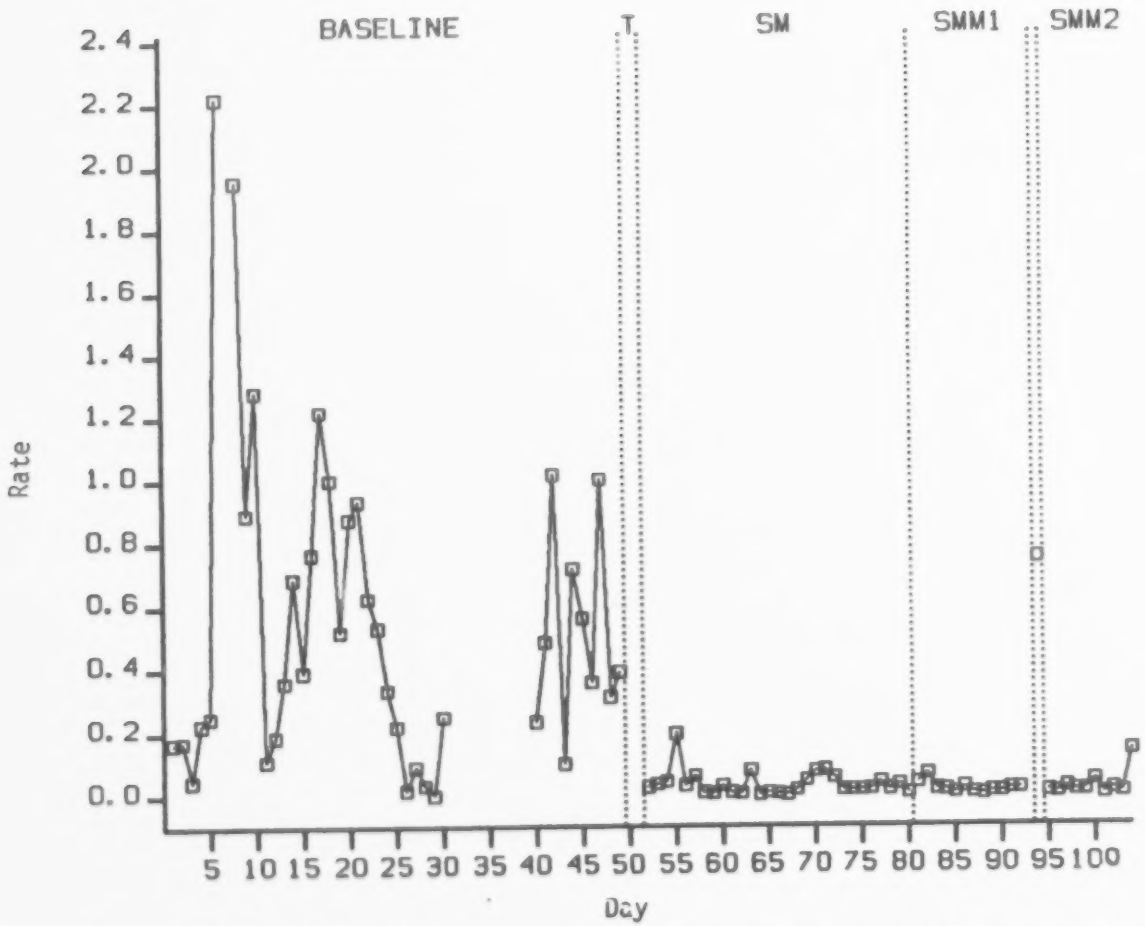

Figure 23. Daily rate of inappropriate verbal and physical behaviors for Subject 5 during baseline, intervention, probe, and maintenance phases.

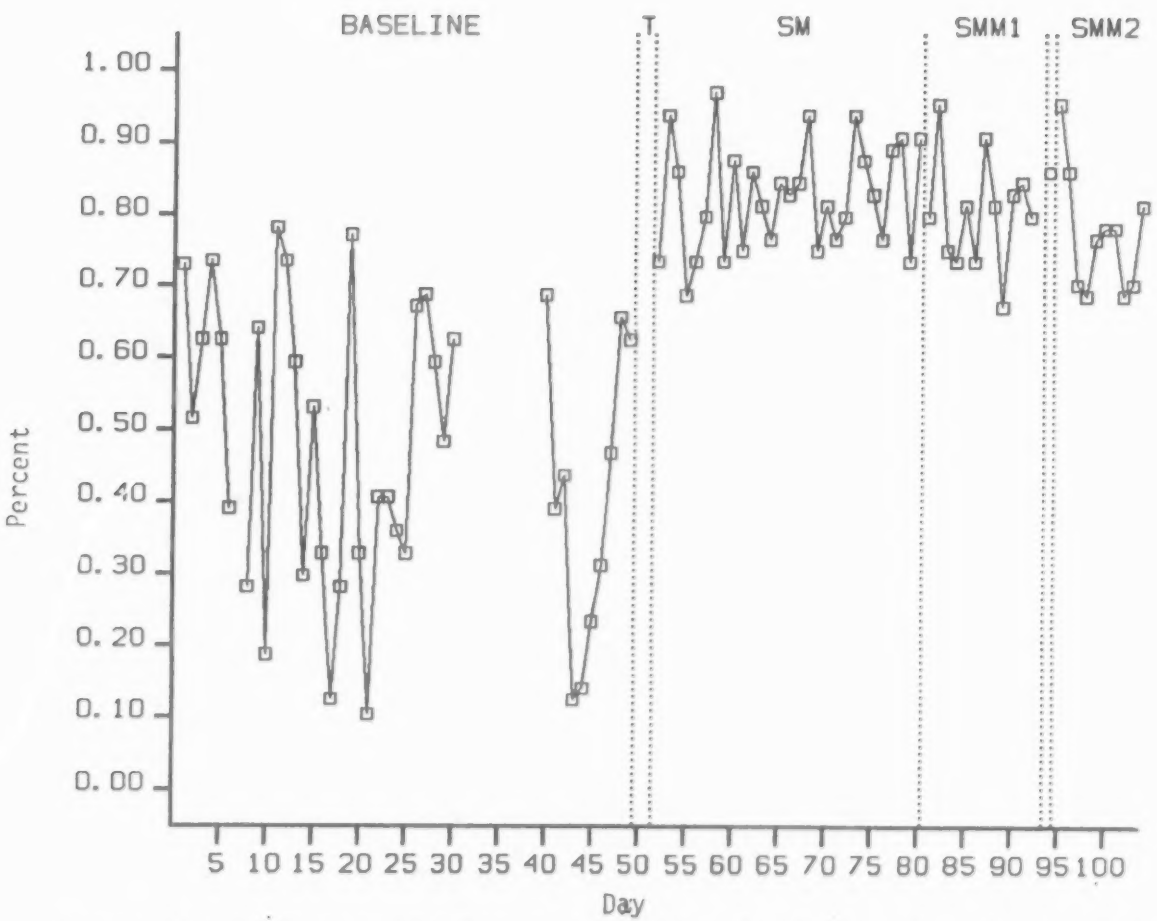

Figure 24. Daily percent of on-task behavior for Subject 5 during baseline, intervention, probe, and maintenance phases.

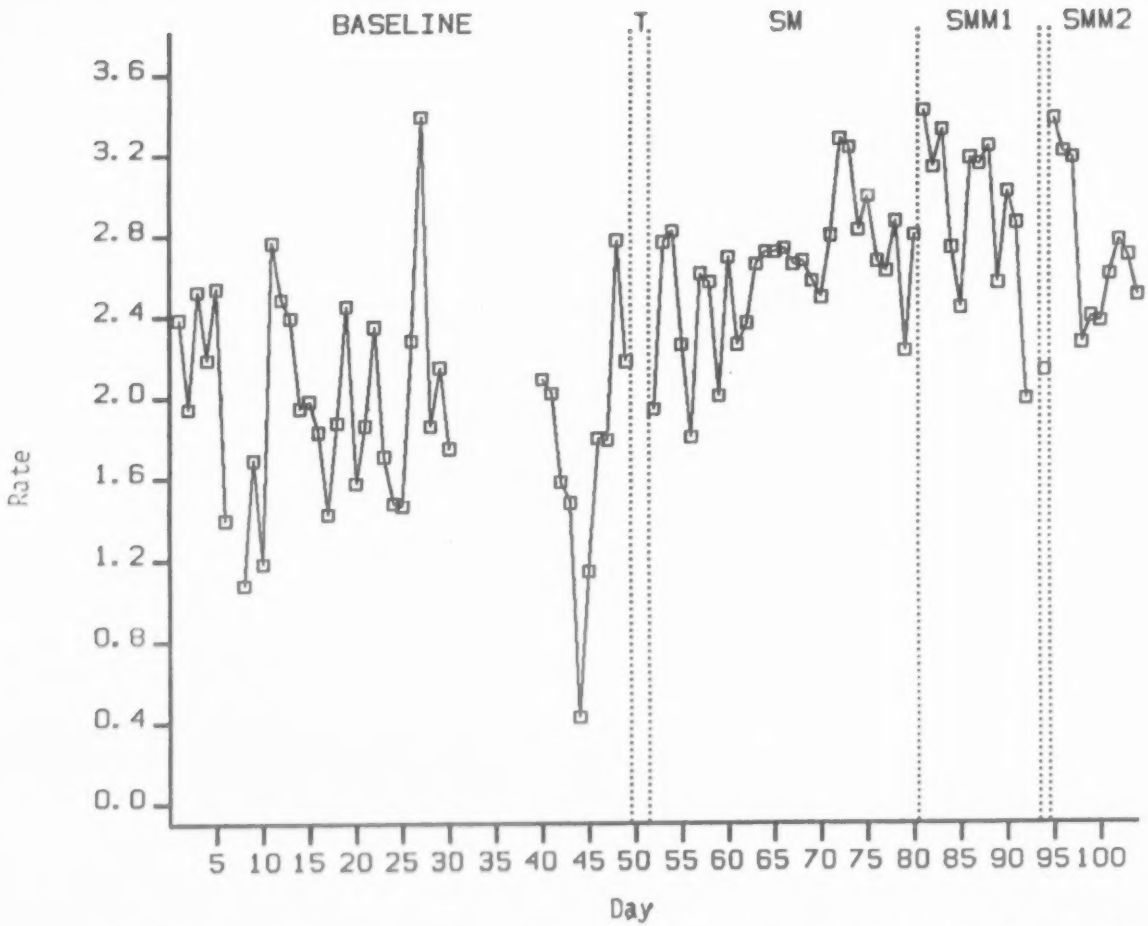

Figure 25. Daily rate of work productivity for Subject 5 during baseline, intervention, probe, and maintenance phases.

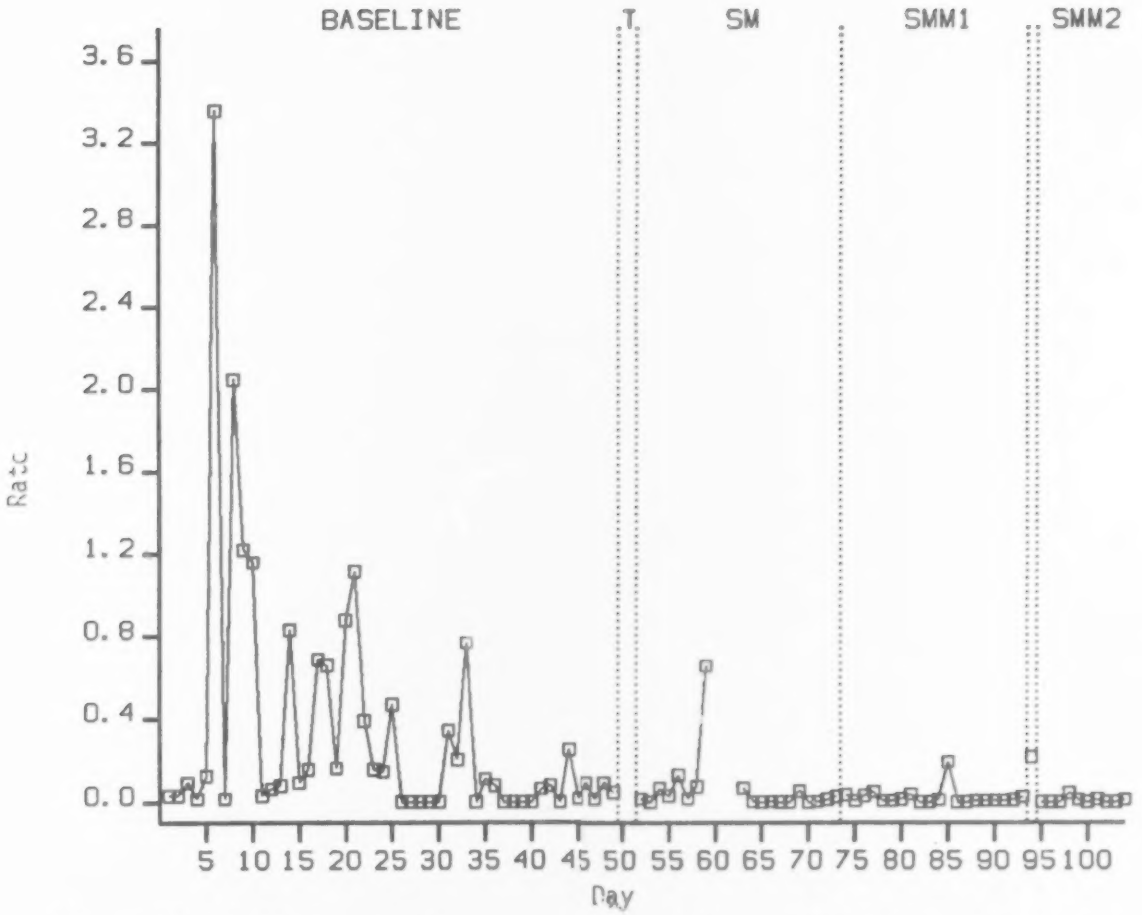

Figure 26. Daily rate of inappropriate verbal and physical behaviors for Subject 6 during baseline, intervention, probe, and maintenance phases.

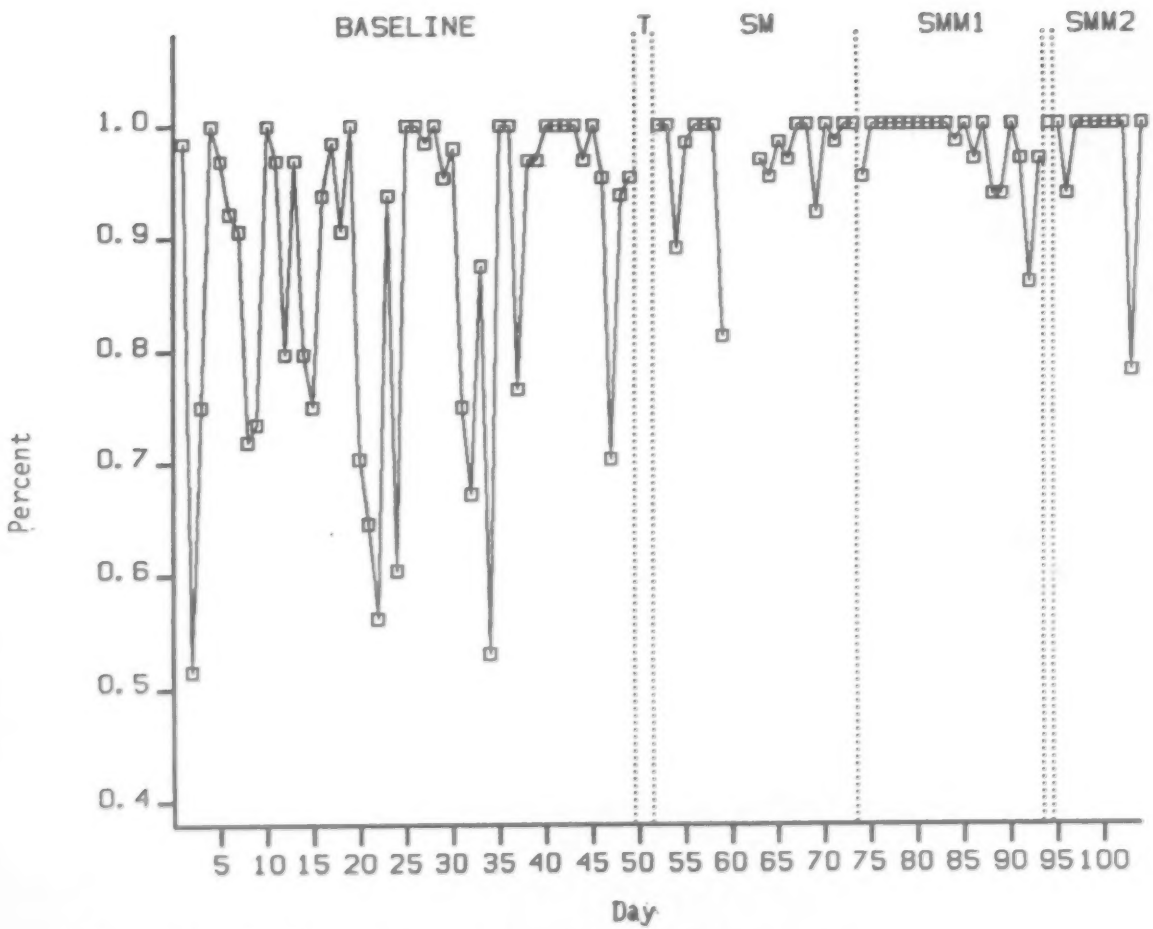

Figure 27. Daily percent of on-task behavior for Subject 6 during baseline, intervention, probe, and maintenance phases.

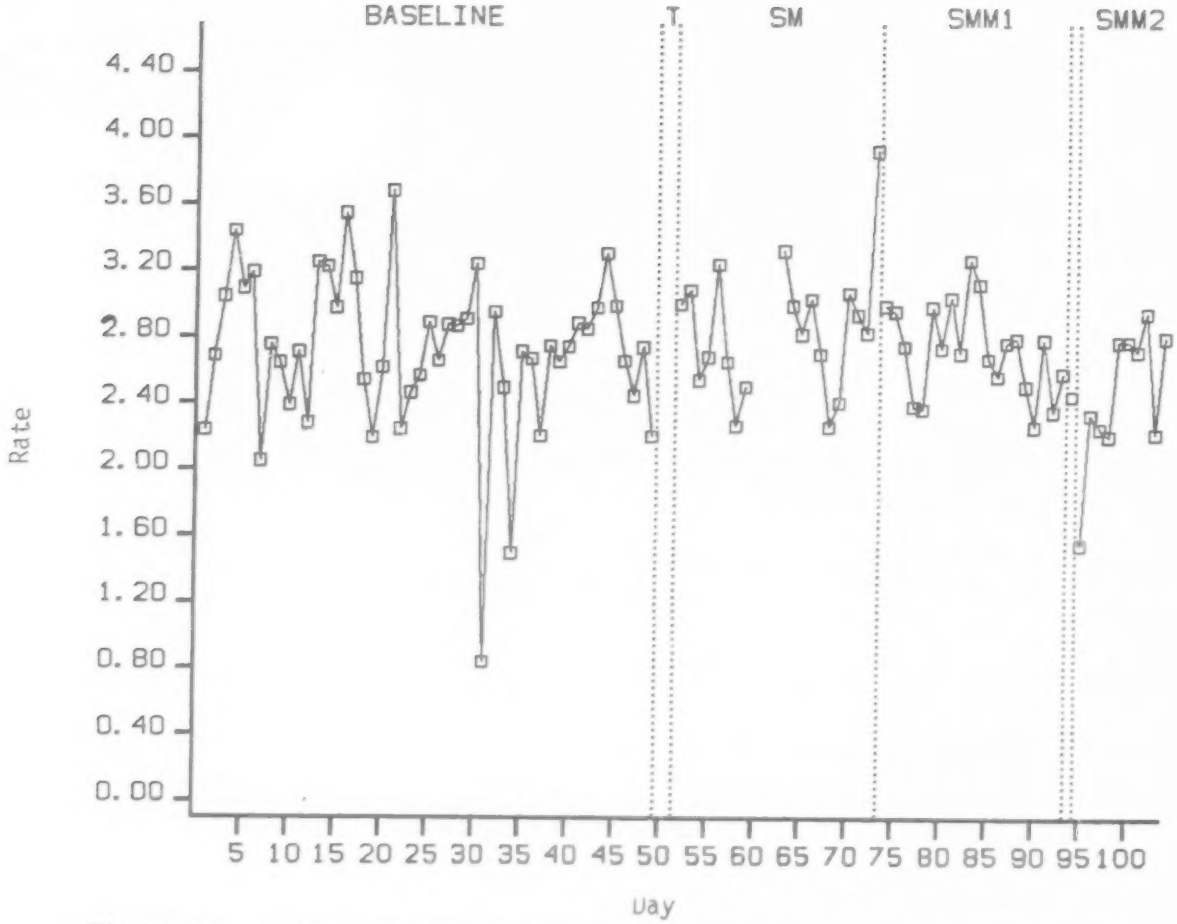

Figure 28. Daily rate of work productivity for Subject 6 during baseline, intervention, probe, and maintenance phases.

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SELF-MANAGEMENT TRAINING OF MENTALLY RETARDED ADULTS WITH CHRONIC CONDUCT DIFFICULTIES

Christine L. Cole, William I. Gardner, and Orv. C. Karan

This monograph reports on research completed within the Structured Learning Habilitation Program of the Research and Training Center at the University of Wisconsin—Madison. Chronic and clinically significant conduct difficulties of mildly and moderately mentally retarded adults in a vocational training setting were successfully reduced following introduction of a multicomponent self-management training package. Contents include: (a) an introduction to the problem and rationale for the study, (b) a comprehensive review of related empirical research, (c) a step-by-step explanation of the methodology used, (d) a presentation of results obtained, and (e) an in-depth discussion of these results. In addition, individual client behavior definitions and scoring rules, a sample training program, and extensive graphic displays of data are provided.

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